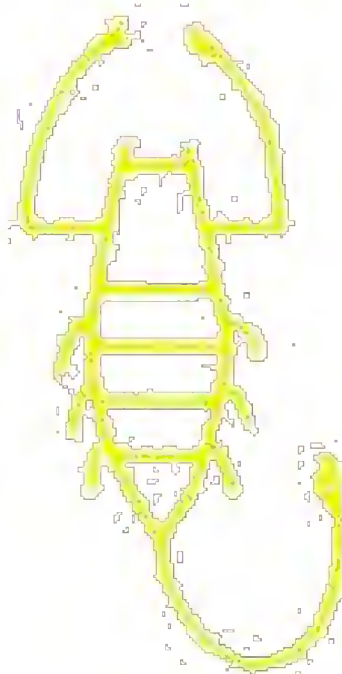


SERKET

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Argiope trifasciata (Forskål, 1775) male and female in a garden in Heliopolis, Cairo, Egypt, May 2016 (Photos by: H.K. El-Hennawy).

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New data on the diversity of scorpion fauna in the oases of south eastern Morocco

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Abstract

Oases form a unique ecosystem, characterized by its specialization precisely due to the effect of isolation and richness. We studied scorpion communities of south eastern Morocco at five oases. Sampling of scorpions was based on hand collecting, during the day and at night with ultraviolet light detection; 246 individuals of six species of family Buthidae were collected. The richest site contained 5 species and had the highest diversity, $H' = 1.57$. The lowest diversity was $H' = 0.85$. The most similar communities were Tagounit and M'hamid elghizlane (100%). The scorpion community at Boumalne was the most dissimilar to the other four sites. *Hottentotta gentili* was the most abundant species, comprising 36.58% of the material collected, while *Buthus boumalenii* was the rarest. Most species within the collection of individuals had a greater affinity for rocky-earthly habitats (66.67%). In terms of seasonal pattern, scorpion abundance was highest during spring and summer seasons. Our results indicate that species composition differ between the northern oases (Boumalne) and the four southern oases.

Keywords: Scorpions, Buthidae, species richness, diversity, oases, Morocco.

Introduction

Morocco with its privileged geographical position, its wide geomorphological variety, and very characteristic climates, has the richest scorpion fauna in North Africa. Touloun *et al.* (2012) have indicated that the Moroccan scorpion fauna is known to be the richest and most diversified, not only in North Africa but also in the entire Mediterranean circumference. Indeed more than 40 species, belonging to 11 genera and two families (*Buthidae* and *Scorpionidae*) are described from the country.



Fig. 1. Location of five oases in south eastern Morocco, surveyed for scorpions.

Oases in Morocco cover an area of about 44,000 ha. located in an arid and hostile environment. Oases form a unique ecosystem, characterized by its specialization precisely due to the effect of isolation and richness. Such environments are good shelters for animal communities in general and in particular for scorpion species.

Scorpions reach their greatest diversity in temperate deserts. Hotspots of scorpion species richness at continental or regional scales are associated with areas of climatic, topographic, and geological complexity (Prendini, 2005). At local scales, scorpion assemblages are structured by temperature, precipitation, substrate (soil hardness and texture; amount of stone or litter cover), and vegetation physiognomy (Prendini, 2001, 2005; Druce *et al.*, 2007). Different substrates exert different selection pressures on scorpions, resulting in the evolution of ecomorphotypes varying from range-restricted stenotopic substrate specialists to more widespread eurytopic substrate generalists (Prendini, 2001).

Scorpions are ecologically important in arid habitats and have the potential to strongly affect community dynamics and structure, especially among arthropods (Polis, 1990, 1993; Polis & Yamashita, 1991). Though, to assess this, scientists need data about basic population- and community-level for scorpion assemblages (Brown *et al.*, 2002). In fact, there is little data on population level characteristics, such as density or standing biomass of most arid zone species. Besides, much of the available data on community-level attributes are even less common and come from a limited number of studies (Bradley, 1986; Bradley & Brody, 1984; Gertsch & Allred, 1965; Jiménez-Jiménez & Palacios-Cardiel, 2010), mostly conducted in North America. Thus there is no such study on the north-African scorpion-fauna.

This study is the first intensive survey about the diversity of scorpions in the southern Moroccan oases. Five sites were chosen as a sample of the arid Moroccan oases,

as they are characterized by their markedly contrasting habitats, climatic conditions, marked diversity, and endemism; besides, their flora and fauna serve as indicators of the conservation status of the habitat. The main objective of this study was to describe the current status of these zones by characterizing composition, richness, and diversity of its scorpions as possible indicators of conservation of these habitats.

Material and Methods

Study site

Five oases were selected; Boumalne (31°22'26"N, 05°59'44"W), Zagora (30°19'50"N, 05°50'17"W), M'hamid el ghizlane (29°43'58"N, 05°57'25"W), Tagounit (29°58'33"N, 05°35'07"W), and Tata (29°44'34"N, 07°58'21"W), located in the region southeast of Morocco. In these places, climate ranges from BWh to BSk (Köppen classification), with low and irregular rainfall in time and space. The average annual rainfall is very low and varies between 64 mm in Zagora and 154 in Boumalne (Fig. 1).

Field work

Sampling was done by using Random and Stratified scheme; briefly the sampling plan adopted was structured according to the knowledge and data acquired during a series of extensive exploration missions. These preliminary assignments were to define the most representative sites to be sampled. In all, 2 different quadrates (100x100 m) were randomly selected in every oasis. Each quadrate was sampled on 4 occasions, during the period stretching between May and August of the year 2012 for the estimation of diversity and microhabitat preferences of scorpion species. Sampling of scorpions was based on actively searching potential scorpion microhabitats and suspected shelters (under rocks, pieces of wood, etc.), during the day and at night with ultraviolet light detection, the method of choice for collecting the greatest diversity and abundance of scorpions in a range of habitats (Sissom *et al.*, 1990).

In order to assess the seasonality pattern of scorpion fauna in the Moroccan oases we have conducted another survey from June 2012 to June 2013. For this survey, 8 transects (100x100 m) were randomly chosen in two oases, Zagora and Tagounit. Sampling was done bi-monthly.

Data analysis

The ten quadrates per site were pooled for subsequent analysis. For each site, relative abundance (RA) was estimated as the relative proportion of the collection contributed to the total collection, as $RA = (n_i (100) / N)$, where n_i is the number of specimens collected at each site and N is the total of specimens collected at all sites. Species richness (SR) was calculated as the number of scorpion species at each site. Similarities between communities were calculated by the Jaccard coefficient: $C_s = C / (S_1 + S_2 - C)$, where S_1 and S_2 are the number of species of communities 1 and 2, and C is the number of species in both communities. Diversity of scorpion species was calculated with the Shannon Index (H') as well as evenness $E = H' / \log N$ (Krebs, 1978). The specimens are deposited in the collection of Ecology and Environment laboratory (L2E).

Results

A total of 246 scorpions from 6 species, 4 genera and 1 family were collected over the period of survey (Table 1). *Hottentotta gentili* (Pallary, 1924) was the most abundant species, comprising 36.58% of the material collected, while *Buthus boumalenii* Touloun

& Boumezzough, 2011 was the rarest. The most commonly found species were: *H. gentili* and *Androctonus amoreuxi* (Audouin, 1825) (observed in all sites), followed by *Androctonus liouvillei* (Pallary, 1924) (observed in 4 sites) (Table 1).

Tagounit and M'hamid elghizlane were the richest sites (5 species) and Zagora was the most abundant (27% of all specimens). Boumalne had the fewest (3 species), as well as being the least abundant (14% of all specimens).

Table 1. Census of scorpions at five oases in five south eastern Moroccan oases.

Species	Boumalne				Zagora				Tagounit				M'hamid el ghizlane				Tata				Total
	Sd	Sd-Rck	Ear	Rck-Ear	Sd	Sd-Rck	Ear	Rck-Ear	Sd	Sd-Rck	Ear	Rck-Ear	Sd	Sd-Rck	Ear	Rck-Ear	Sd	Sd-Rck	Ear	Rck-Ear	
<i>Androctonus liouvillei</i>	0	0	0	0	0	0	2	10	0	0	0	8	0	0	1	9	0	0	0	4	34
<i>Androctonus amoreuxi</i>	2	0	0	0	10	4	0	0	7	2	0	0	4	0	0	0	2	6	0	0	37
<i>Buthus draa</i>	0	0	0	0	0	0	0	15	0	0	7	4	0	0	6	3	0	0	0	0	35
<i>Buthus boumalenii</i>	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
<i>Hottentotta gentili</i>	0	0	0	12	0	0	20	6	0	0	12	6	0	0	13	4	0	0	12	5	90
<i>Orthochirus innesi</i>	0	0	0	0	0	0	0	0	0	0	12	0	0	0	7	0	0	0	11	0	30
Total	2	0	0	32	10	4	22	31	7	2	31	18	4	0	27	16	2	6	23	9	246

Sd = sandy soil, Sd-Rck = sandy-rocky soil, Ear = earthy soil, Rck-Ear = rocky-earthly soil.

Species diversity was highest at Tagounit ($H' = 1.57$) and evenness ($E = 0.97$), followed by M'hamid elghizlane ($H' = 1.51$). The lowest diversity was observed again, in Boumalne ($H' = 0.85$, $E = 0.77$). The most similar communities were Tagounit and M'hamid elghizlane (100%). The scorpion community at Boumalne was the most dissimilar to the other four sites (Table 2).

Table 2. Ecological indices of scorpions at five oases in the south eastern Moroccan oases.

Locality	Cs					SR (n)	RA	H'	E
	Zagora	Tagounit	M'hamid el ghizlane	Tata	Boumalne				
Zagora		0,8	0,8	0,6	0,4	4	26,3	1,34	0,96
Tagounit			1	0,8	0,33	5	22,9	1,57	0,97
M'hamid el ghizlane				0,8	0,33	5	18,2	1,51	0,94
Tata					0,33	4	16,9	1,27	0,92
Boumalne						3	14,4	0,85	0,77

Cs = similarity, SR = species richness, RA = relative abundance (%), H' = species diversity, E = species evenness.

Among the four microhabitats studied, most species within the collection of individuals had a greater affinity for rocky-earthly habitats (66.67%). The exceptions were *A. amoreuxi*, and *Orthochirus innesi* Simon, 1910, which were more abundant in the sandy and earthy habitats respectively (Table 1). Besides, scorpion species can be classified according to the type of habitat; *A. amoreuxi* was restricted to sandy and sandy-rocky areas, it is a psammophilous and semi-psammophilous species. *O. innesi* was limited to areas with loamy, clayey soils, it is a pelophilous species. *B. boumalenii* is a lapidicolous species; it was found to occupy areas with rocky cover in Boumalne oasis. *A. liouvillei*, *H. gentili*, and *Buthus draa* Lourenço & Slimani, 2004 were more widely distributed across a range of earthy to rocky earthy soils.

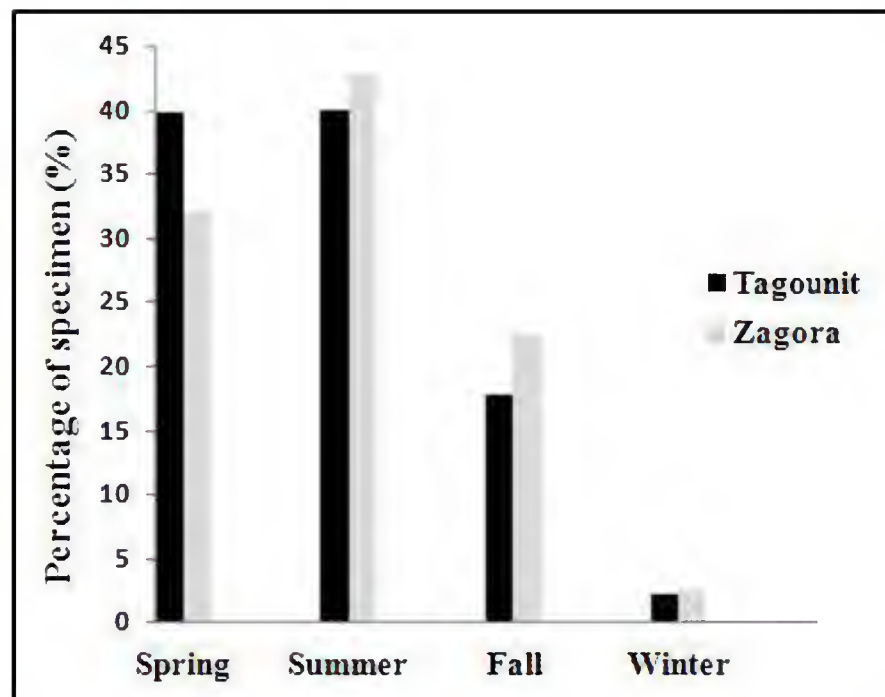


Fig. 2. Scorpion seasonality in two oases: Zagora and Tagounit.

When assessed in terms of seasonal pattern, scorpion abundance was highest during spring (March-May) and summer (June-August) seasons and it was lowest in the winter (December-February) (Fig. 2).

Discussion

Morocco has around 54 species of scorpion fauna of which 19 species are recorded from the eastern side of the country. We recorded a total of six species (11.11% of the total scorpion fauna of Morocco and 31.58% of scorpion fauna in the eastern part of the country) in the studied area.

Despite the importance of oases areas, due to their isolation and their biodiversity value (e.g. endemism), there are few studies on scorpion communities in these types of habitats. Our data show that the overall Shannon index is very low indicating low species diversity in the surveyed oases. This may be partly attributed to the restricted movement of scorpion, cannibalism, predation from nocturnal predators (Pande *et al.*, 2004), habitat specificity, food size specificity, extreme climate adaptability, and adaptive radiation (Polis, 1990). These factors together with a longer life span of most of the arachnid species as compared with many other invertebrates, may act as the limiting factors as far as the species diversity is concerned (Pande *et al.*, 2012).

Comparing community composition of scorpions in the five oases, we find certain differences in richness. Indeed, Tagounit and M'hamid elghizlane were the richest sites with five species followed by Zagora and Tata with 4 species and in the last position, Boumalne with 3 species. The richness difference among Boumalne and the other four sites could be explained by the difference in altitude. Boumalne, in fact, is located in high altitude (1500m), while the other oases are located in mid-altitude (500-700m). Actually many authors had reported that species richness decreases with altitude (Prendini & Bird, 2008; Munyai & Foord, 2012). Nevertheless this difference may be related to other ecological factors. Several data had shown that scorpion species richness at continental or regional scales is associated with areas of climatic and geological complexity (Prendini, 2005).

When we compare the overall percent abundance, *H. gentili* (36.58%) appears to be the most dominant species whereas *B. boumalenii* (8.13%) is the rarest one, while other species have a close abundance ranging between (12.20 and 15%). Relative abundance of *B. boumalenii* could be explained by its restricted localization at Boumalne oasis; hence this species appears to be more habitat specific.

Previously, scorpions were considered opportunistic species able to colonize different environments. Currently we realized that most, if not all, species are little plastic and tend to colonize stable and predictable habitats. Species with opportunistic traits are fewer. Species in studied area exhibit very different ecological characteristics. Some species are restricted to stable and predictable environment allowing them to devote more energy in biotic exchanges. Other species are plastic and have irregular distribution models. Thus *O. innesi*, *B. boumalenii*, and *A. amoreuxi* are non-opportunistic species because they are not plastic and environmentally show strict respect to the nature of the substratum requirements. Indeed all these species are restricted to one type of substratum; earthy soil for *O. innesi*, rocky-earthly ground for *B. boumalenii*, and sandy systems for *A. amoreuxi*. The importance of the substratum in scorpion ecology and distribution is well known (Fet *et al.*, 1998; Prendini, 2001). Lamoral (1979) established that the distribution of *Opisthophthalmus* in southern Africa is determined primarily by soil hardness and, to a lesser degree, by soil texture, each species being restricted to soils within a certain range of hardness, rather than to a particular soil type. Lamoral (1978) concluded that “the nature of the substratum, taken in its broadest possible definition, is probably the most important single factor that has and still determines the distribution of scorpions”. However, *H. gentili* and *A. liouvillei* are sufficiently plastic species. They can colonize disturbed environments widely modified by human activities and even penetrate into dwellings. Prendini (2001) had reported that Lapidicolous scorpions, which shelter under stones or any other available cover, are habitat generalists, displaying few eco-morphological adaptations and varied, often widespread distributions.

Community similarity indicates that scorpions in Boumalne oasis have a unique complement of species. All other sites show 50% or more similarity with each other indicating more species overlap. These results suggest that we can distinguish two scorpion communities; the first in the northern part of the studied area including Boumalne, and the second located in the south area composed of Zagora, Tagounit, M’hamid elghizlane, and Tata.

To assess the variability in abundance through the season, we conducted a bi-monthly survey in two oases Zagora and Tagounit. Results show a similar seasonality pattern in these two sites, with a high abundance of scorpion-fauna in spring and summer. This could be explained by the proliferation of prey during these months of the year. Jiménez-Jiménez & Palacios-Cardiel (2010) reported that dramatic annual fluctuations of scorpion populations appear to be primarily linked to fluctuations in its food base.

Conclusion

There are several studies undertaken on systematic and description of new species in Morocco. However this is the first work on diversity, distribution and abundance estimates for scorpion communities from the south-eastern oases of Morocco. Because of the ecological importance of scorpions in arid environments (Polis, 1990), our study provides a baseline of biological data for further demographic and broader ecological studies on these arachnid taxa.

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The spider fauna of Hasan Mountain in Turkey *

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Abstract

Spider specimens were collected, during field studies, from Hasan Mountain in the provinces of Niğde and Aksaray of Turkey between July 2013 and June 2014. A total of 2418 adult specimens were studied, 115 spider species belonging to 72 genera under 23 families were identified. The collected dictynid species *Lathys stigmatisata* (Menge, 1869) is a new record for the Turkish spider fauna.

Keywords: Spiders, Araneae, Fauna, Hasan Mountain, Turkey.

Introduction

Araneae is one of the most abundant orders in the world, consisting of about 45,900 species belonging to 114 families (World Spider Catalog, 2016). So far, 53 families, 330 genera and 1017 species of Araneae have been recorded from Turkey (Topçu *et al.*, 2005; Demir, 2012; Demir *et al.*, 2014, 2015; Bayram *et al.*, 2016). The aim of this study is to determine the areneofauna of Hasan Mountain (Niğde-Aksaray) of Turkey.

Material and Methods

Spider specimens were collected from the study area between July 2013 and June 2014 in Hasan Mountain (Niğde-Aksaray provinces) of Turkey. The specimens were preserved in 70% ethanol. The identification was made by means of a SZX61 Olympus stereo-microscope. Examined specimens were deposited in the NUAM (Arachnology Museum of Niğde University, Niğde, Turkey). World distribution of all species follows the World Spider Catalog (2016).

* This paper includes data extracted from the M.Sc. thesis of the first author.

Results

A total of 2418 adult specimens were collected. They belong to 115 spider species of 72 genera under 23 families. The collected dictynid species *Lathys stigmatisata* (Menge, 1869) is a new record for the Turkish spider fauna.

A complete list of studied taxa with localities and dates of collecting is:

Family Agelenidae

Agelena Walckenaer, 1805

Agelena orientalis C.L.Koch, 1837

Material examined: Karakapı 1 (38°03'82"N, 34°09'53"E), 1450m, 23.VII.2013 (3♂), 07.VI.2014 (1♀). Akçakent 1 (38°05'37"N, 34°05'72"E), 1485m, 23.VII.2013 (1♂), 07.VI.2014 (2♀). Karacaören 1 (38°07'98"N, 34°04'63"E), 1300m, 23.VII.2013 (2♂), 07.VI.2014 (3♂ 2♀). Aşağı Dikmen village (38°09'34"N, 34°05'25"E), 1410m, 23.VII.2013 (1♂), 07.VI.2014 (3♀). Gözlükuyu 3 (38°10'33"N, 34°07'14"E), 1474m, 23.VII.2013 (2♂ 2♀); 07.VI.2014 (4♂ 2♀). Karkın–Helvadere (38°11'22"N, 34°10'28"E), 1405m, 23.VII.2013 (3♂ 3♀), 07.VI.2014 (2♂ 4♀).

World Distribution: Italy to Central Asia, Iran.

Agelescape Levy, 1996

Agelescape gideoni Levy, 1996

Material examined: Hasan Mountain 3 (38°09'16"N, 34°09'49"E), 2050m, 28.VIII.2013 (1♀), 01.XII.2013 (1♀). Küçük Hasan Mountain 2 (38°08'13"N, 34°14'49"E), 2089m, 28.VIII.2013 (2♀), 01.XII.2013 (1♀). Hasan Mountain 4 (38°09'88"N, 34°11'42"E), 2138m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀), 01.XII.2013 (2♀), 07.VI.2014 (2♀).

World Distribution: Turkey to Israel, Iran.

Tegenaria Latreille, 1804

Tegenaria argaeica Nosek, 1905

Material examined: Karakapı 3 (38°05'32"N, 34°10'87"E), 1867m, 23.VII.2013 (2♂ 2♀), 28.VIII.2013 (2♂ 1♀), 01.XII.2013 (1♂), 07.VI.2014 (3♂ 2♀). Hasan Mountain 1 (38°06'08"N, 34°09'20"E), 2204m, 23.VII.2013 (3♀), 28.VIII.2013 (1♀), 01.XII.2013 (2♂ 3♀), 07.VI.2014 (1♂ 1♀). Karakapı 4 (38°05'55"N, 34°09'86"E), 1950m, 23.VII.2013 (4♂ 1♀), 28.VIII.2013 (3♂ 2♀), 01.XII.2013 (1♀), 07.VI.2014 (2♂). Helvadere Doğu (38°10'34"N, 34°10'53"E), 1650m, 23.VII.2013 (3♂ 3♀), 28.VIII.2013 (2♂ 4♀), 01.XII.2013 (1♀), 07.VI.2014 (1♂ 1♀). Yenipınar Kuzey (38°09'44"N, 34°13'83"E), 1806m, 23.VII.2013 (3♂ 3♀), 28.VIII.2013 (2♂), 01.XII.2013 (1♂ 1♀), 07.VI.2014 (3♂). **World Distribution:** Bulgaria, Turkey.

Family Araneidae

Aculepeira Chamberlin & Ivie, 1942

Aculepeira armida (Savigny, 1825)

Material examined: Keçikalesi 3 (38°05'42"N, 34°08'49"E), 1950m, 01.XII.2014 (3♀). Karakapı 3 (38°05'32"N, 34°10'87"E), 1867m, 01.XII.2013 (1♀). Hasan Mountain 1 (38°06'08"N, 34°09'20"E), 2204m, 01.XII.2013 (3♀). Helvadere 3 (38°09'68"N, 34°11'72"E), 1787m, 23.VII.2013 (4♀), 28.VIII.2013 (2♀), 07.VI.2014 (1♀).

World Distribution: Palearctic.

Araniella Chamberlin & Ivie, 1942

Araniella cucurbitina (Clerck, 1757)

Material examined: Keçikalesi 2 (38°05'61"N, 34°08'29"E), 1750m, 23.VII.2013 (2♀).
Helvadere 3 (38°09'68"N, 34°11'72"E), 1787m, 23.VII.2013 (1♀).

World Distribution: Palearctic.

Argiope Savigny, 1825

Argiope lobata (Pallas, 1772)

Material examined: Keçikalesi 2 (38°05'61"N, 34°08'29"E), 1750m, 23.VII.2013 (1♀).
Helvadere 3 (38°09'68"N, 34°11'72"E), 1787m, 23.VII.2013 (2♀), 07.VI.2014 (2♀).

World Distribution: Old World.

Larinioides Caporiacco, 1934

Larinioides cornutus (Clerck, 1757)

Material examined: Keçikalesi 3 (38°05'42"N, 34°08'49"E), 1950m, 23.VII.2013 (5♂
4♀), 28.VIII.2013 (3♂ 2♀), 07.VI.2014 (4♂ 5♀). Hasan Mountain 2 (38°09'05"N,
34°10'50"E), 1859m, 23.VII.2013 (6♂ 4♀). Helvadere Doğu (38°10'34"N, 34°10'53"E),
1650m, 23.VII.2013 (3♂), 28.VIII.2013 (4♂ 4♀), 07.VI.2014 (3♂). Yenipınar Kuzey
(38°09'44"N, 34°13'83"E), 1806m, 23.VII.2013 (2♂ 1♀), 28.VIII.2013 (3♂ 4♀),
07.VI.2014 (3♀). **World Distribution:** Holarctic.

Mangora O.P.-Cambridge, 1889

Mangora acalypha (Walckenaer, 1802)

Material examined: Hasan Mountain 4 (38°09'88"N, 34°11'42"E), 2138m, 28.VIII.2013
(1♀), 01.XII.2013 (2♀), 07.VI.2014 (1♀). **World Distribution:** Palearctic.

Neoscona Simon, 1864

Neoscona adianta (Walckenaer, 1802)

Material examined: Hasan Mountain 1 (38°06'08"N, 34°09'20"E), 2204m 28.VIII.2013
(2♂ 2♀), 01.XII.2013 (2♂ 1♀). Hasan Mountain 3 (38°09'16"N, 34°09'49"E), 2050m,
28.VIII.2013 (1♂), 01.XII.2013 (2♀). Küçük Hasan Mountain 2 (38°08'13"N,
34°14'49"E), 2089m, 28.VIII.2013 (2♂), 01.XII.2013 (1♂ 1♀). Hasan Mountain 4
(38°09'88"N, 34°11'42"E), 2138m, 28.VIII.2013 (3♂ 2♀), 01.XII.2013 (2♀).

World Distribution: Palearctic.

Family Dictynidae

Dictyna Sundevall, 1833

Dictyna pusilla Thorell, 1856

Material examined: Keçikalesi 2 (38°05'61"N, 34°08'29"E), 1750m, 19.IV.2014 (1♀),
07.VI.2014 (1♀). Karacaören 1 (38°07'98"N, 34°04'63"E), 1300m, 07.VI.2014 (2♀).
Helvadere 2 (38°10'07"N, 34°11'54"E), 1642m, 19.IV.2014 (1♀), 07.VI.2014 (1♂ 1♀).
Helvadere 3 (38°09'68"N, 34°11'72"E), 1787m, 19.IV.2014 (1♀).

World Distribution: Palearctic.

Lathys Simon, 1884

Lathys stigmatisata (Menge, 1869) (Figs. 1-2)

Material examined: Yukarı Dikmen village 2 (38°09'50"N, 34°07'33"E), 1770m,
07.VI.2014 (2♂ 1♀). Dikmen–Gözlükuyu (38°09'67"N, 34°07'40"E), 1587m, 10.V.2014
(1♂ 3♀). Gözlükuyu–Karkın 1 (38°11'36"N, 34°08'43"E), 1360m, 07.VI.2014 (2♂ 2♀).
Karkın 2 (38°10'61"N, 34°10'89"E), 1403m 07.VI.2014 (1♀). Karkın–Helvadere
(38°11'22"N, 34°10'28"E), 1405m, 07.VI.2014 (2♂ 1♀). **World Distribution:** Europe.

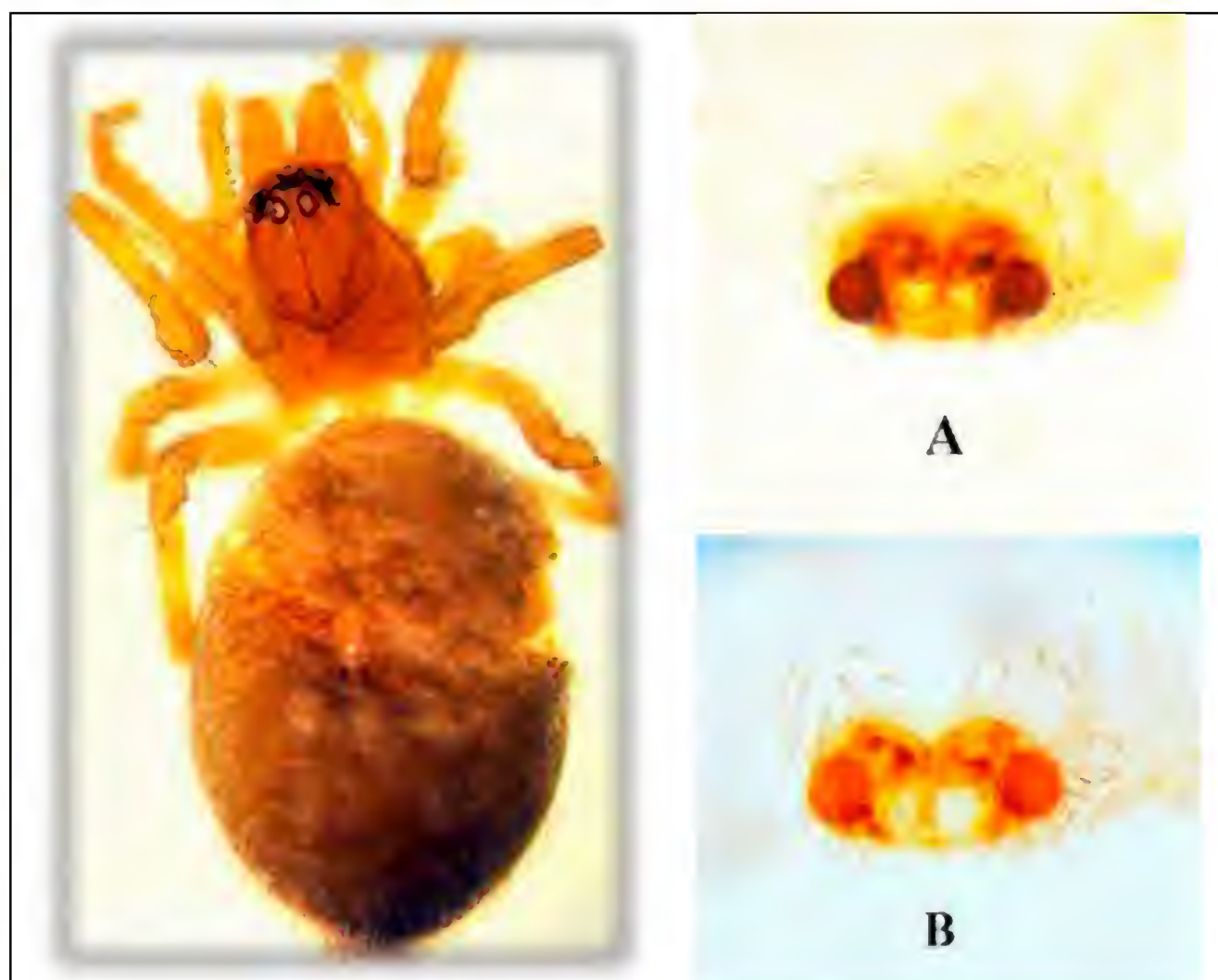


Fig. 1. Female of *Lathys stigmatisata*, habitus, dorsal view.
A. Epigyne, ventral view. B. Vulvae, dorsal view.

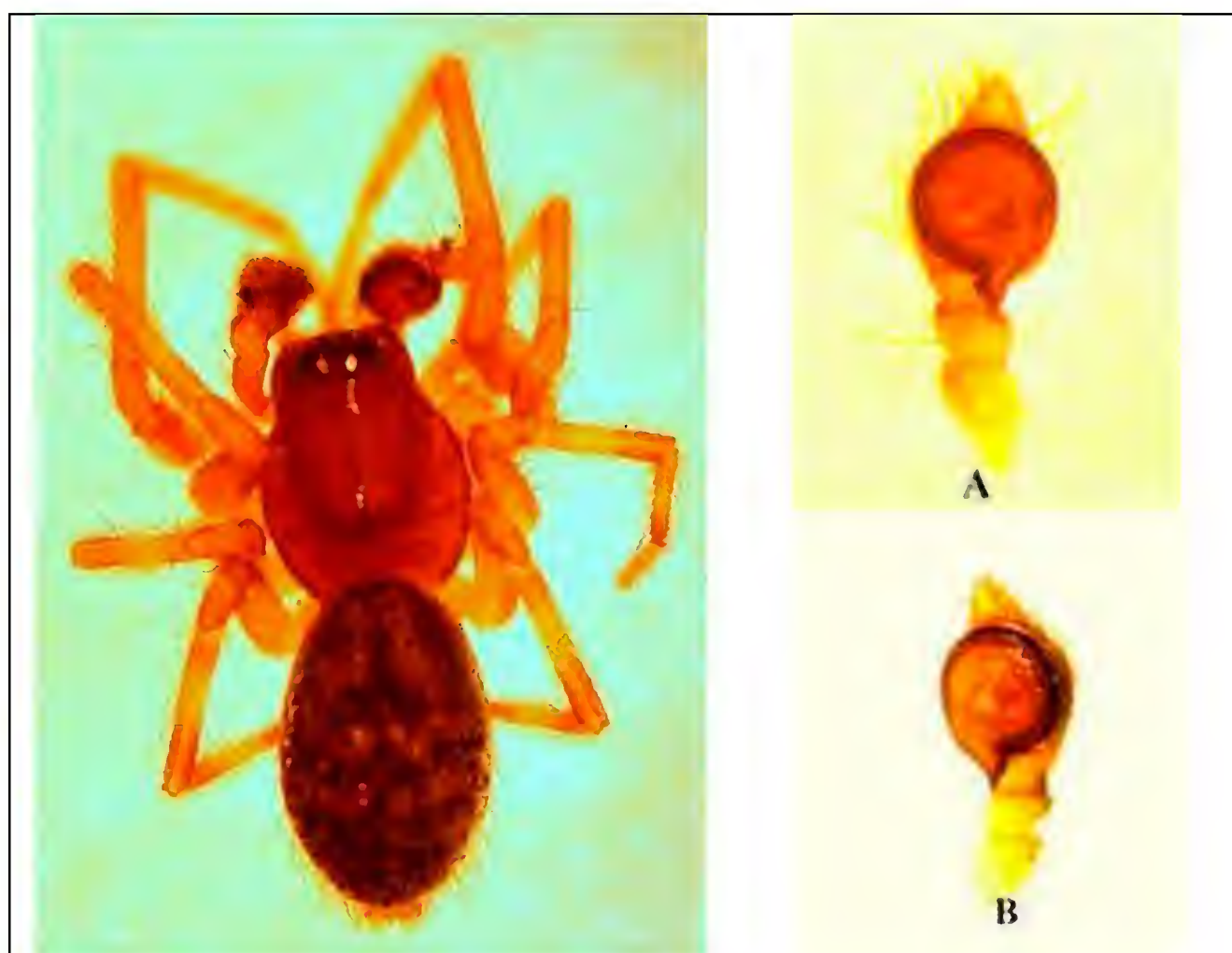


Fig. 2. Male of *Lathys stigmatisata*, habitus, dorsal view.
A-B. Male palp. A. ventral view, B. retrolateral view.

Family Eutichuridae

Cheiracanthium C.L. Koch, 1839

Cheiracanthium pennyi O.P.-Cambridge, 1873

Material examined: Keçikalesi 3 (38°05'42"N, 34°08'49"E), 1950m, 23.VII.2013 (1♀), 07.VI.2014 (1♀). **World Distribution:** Palearctic.

Family Gnaphosidae
***Callilepis* Westring, 1874**

***Callilepis nocturna* (Linnaeus, 1758)**

Material examined: Karakapı 1 (38°03'82"N, 34°09'53"E), 1450 m, 23.VII.2013 (2♂). Akçakent 1 (38°05'37"N, 34°05'72"E), 1485 m, 23.VII.2013 (1♂), 19.IV.2014 (1♂). Akçakent–Karacaören 1 (38°05'18"N, 34°05'04"E), 1400m, 23.VII.2013 (3♂). Dikmen–Gözlükuyu (38°09'67"N, 34°07'40"E), 1587m, 23.VII.2013 (1♂), 07.VI.2014 (2♂).
World Distribution: Palearctic.

***Civizelotes* Senglet, 2012**

***Civizelotes caucasius* (L. Koch, 1866)**

Material examined: Karakapı 2 (38°04'48"N, 34°10'17"E), 1604m, 23.VII.2013 (2♂ 2♀), 07.VI.2014 (3♂ 2♀). Keçikalesi 1 (38°04'37"N, 34°08'26"E), 1534m, 07.VI.2014 (1♂ 2♀). Keçikalesi 2 (38°05'61"N, 34°08'29"E), 1750m, 23.VII.2013 (2♂ 2♀), 07.VI.2014 (3♂ 1♀). Keçikalesi–Akçakent (38°04'51"N, 34°06'73"E), 1724m, 23.VII.2013 (1♂ 2♀), 07.VI.2014 (2♂). Akçakent 1 (38°05'37"N, 34°05'72"E), 1485m, 23.VII.2013 (3♂ 1♀), 07.VI.2014 (3♂ 1♀). Akçakent 2 (38°05'10"N, 34°06'34"E), 1550m, 23.VII.2013 (2♂ 2♀), 07.VI.2014 (1♂ 2♀). Akçakent 3 (38°06'86"N, 34°06'55"E), 1630m, 23.VII.2013 (2♀), 07.VI.2014 (2♂ 2♀). Akçakent–Karacaören 2 (38°06'12"N, 34°05'56"E), 1513m, 07.VI.2014 (3♂ 1♀). Karacaören 2 (38°08'43"N, 34°05'55"E), 1407m, 23.VII.2013 (2♂ 1♀), 07.VI.2014 (2♂ 2♀). Karacaören 3 (38°07'47"N, 34°06'30"E), 1680m, 23.VII.2013 (1♂ 1♀), 07.VI.2014 (2♂ 2♀). Yukarı Dikmen village 1 (38°08'38"N, 34°06'28"E), 1600m, 23.VII.2013 (2♂ 1♀), 07.VI.2014 (2♂ 1♀). Yukarı Dikmen village 2 (38°09'50"N, 34°07'33"E), 1770m, 23.VII.2013 (3♂ 1♀), 07.VI.2014 (1♂ 1♀). Dikmen–Gözlükuyu (38°09'67"N, 34°07'40"E), 1587m, 23.VII.2013 (1♂ 3♀), 07.VI.2014 (1♂ 2♀). Gözlükuyu 2 (38°10'86"N, 34°07'39"E), 1610m, 23.VII.2013 (1♀), 07.VI.2014 (2♂ 1♀). Helvadere 2 (38°10'07"N, 34°11'54"E), 1642 m, 23.VII.2013 (2♂ 1♀), 07.VI.2014 (1♂ 2♀). Helvadere 3 (38°09'68"N, 34°11'72"E), 1787m, 23.VII.2013 (1♂ 1♀), 07.VI.2014 (2♂ 2♀).
World Distribution: Europe to Central Asia.

***Drassodes* Westring, 1851**

***Drassodes bifidus* Kovblyuk & Seyyar, 2009**

Material examined: Hasan Mountain 2 (38°09'05"N, 34°10'50"E), 1859m, 23.VII.2013 (2♀), 28.VIII.2013 (1♂ 2♀), 01.XII.2013 (3♂), 19.IV.2014 (2♂ 1♀), 10.V.2014 (4♂ 3♀), 07.VI.2014 (3♂ 5♀). Hasan Mountain 3 (38°09'16"N, 34°09'49"E), 2050m, 23.VII.2013 (2♂ 2♀), 28.VIII.2013 (1♂ 1♀), 01.XII.2013 (3♂ 1♀), 19.IV.2014 (2♂ 3♀), 10.V.2014 (3♂ 4♀), 07.VI.2014 (1♂ 1♀). Yenipınar Kuzey (38°09'44"N, 34°13'83"E), 1806m, 23.VII.2013 (2♂ 2♀), 28.VIII.2013 (3♂ 1♀), 01.XII.2013 (4♂ 2♀), 19.IV.2014 (3♂ 3♀), 10.V.2014 (1♂ 1♀), 07.VI.2014 (1♀). Yenipınar (38°10'77"N, 34°14'04"E), 1736m, 23.VII.2013 (2♂), 28.VIII.2013 (3♀), 01.XII.2013 (1♂ 2♀), 19.IV.2014 (1♂ 1♀), 10.V.2014 (2♂ 2♀), 07.VI.2014 (3♂). Küçük Hasan Mountain 1 (38°08'23"N, 34°14'15"E), 1868m, 23.VII.2013 (1♂ 1♀), 28.VIII.2013 (3♀), 19.IV.2014 (1♂), 10.V.2014 (1♀), 07.VI.2014 (3♀). Küçük Hasan Mountain 2 (38°08'13"N, 34°14'49"E), 2089m, 23.VII.2013 (2♂ 3♀), 28.VIII.2013 (2♂, 1♀), 01.XII.2013 (1♂ 2♀), 19.IV.2014 (3♂ 2♀), 10.V.2014 (1♂), 07.VI.2014 (2♀). Hasan Mountain 4 (38°09'88"N, 34°11'42"E), 2138m, 23.VII.2013 (2♂), 01.XII.2013 (3♀), 19.IV.2014 (1♂), 10.V.2014 (3♂ 3♀), 07.VI.2014 (2♂ 1♀).
World Distribution: Turkey (Endemic).

***Drassodes lacertosus* (O.P.-Cambridge, 1872)**

Material examined: Karakapı 2 (38°04'48"N, 34°10'17"E), 1604m, 28.VIII.2013 (2♂ 1♀), 07.VI.2014 (3♂ 2♀). Keçikalesi 2 (38°05'61"N, 34°08'29"E), 1750m, 23.VII.2013 (1♂ 1♀), 28.VIII.2013 (2♂). Keçikalesi–Akçakent (38°04'51"N, 34°06'73"E), 1724m, 23.VII.2013 (2♂ 2♀), 28.VIII.2013 (1♀), 01.XII.2013 (1♂ 2♀), 07.VI.2014 (3♀). Akçakent 3 (38°06'86"N, 34°06'55"E), 1630m, 23.VII.2013 (2♂ 1♀), 28.VIII.2013 (1♂ 1♀), 01.XII.2013 (3♂), 07.VI.2014 (2♀).

World Distribution: Greece, Turkey, Israel, Syria.

***Drassodes lapidosus* (Walckenaer, 1802)**

Material examined: Karakapı 2 (38°04'48"N, 34°10'17"E), 1604m, 23.VII.2013 (2♂ 3♀), 01.XII.2013 (1♂ 1♀), 19.IV.2014 (4♂ 3♀), 10.V.2014 (5♂ 4♀), 07.VI.2014 (3♂ 2♀). Hasan Mountain 1 (38°06'08"N, 34°09'20"E), 2204m, 23.VII.2013 (3♀), 28.VIII.2013 (2♂ 3♀), 01.XII.2013 (3♂ 3♀), 19.IV.2014 (2♂ 1♀), 10.V.2014 (4♂ 2♀), 07.VI.2014 (3♂ 4♀). Karakapı 4 (38°05'55"N, 34°09'86"E), 1950m, 23.VII.2013 (2♂ 2♀), 28.VIII.2013 (3♂ 3♀), 19.IV.2014 (1♀), 10.V.2014 (1♂ 3♀), 07.VI.2014 (3♂ 4♀). Keçikalesi 2 (38°05'61"N, 34°08'29"E), 1750m, 23.VII.2013 (2♂ 1♀), 28.VIII.2013 (1♀), 01.XII.2013 (3♂ 1♀), 19.IV.2014 (3♂), 10.V.2014 (3♂ 2♀), 07.VI.2014 (4♂ 2♀). Keçikalesi–Akçakent (38°04'51"N, 34°06'73"E), 1724m, 23.VII.2013 (3♂), 28.VIII.2013 (2♀), 01.XII.2013 (2♂ 3♀), 19.IV.2014 (3♂ 2♀), 10.V.2014 (3♂ 4♀), 07.VI.2014 (1♂). Yukarı Dikmen village 2 (38°09'50"N, 34°07'33"E), 1770m, 23.VII.2013 (1♂ 1♀), 28.VIII.2013 (3♂ 5♀), 01.XII.2013 (4♂ 2♀), 19.IV.2014 (2♂ 2♀), 10.V.2014 (3♂ 1♀), 07.VI.2014 (2♂ 4♀). Gözlükuyu 2 (38°10'86"N, 34°07'39"E), 1610m, 23.VII.2013 (3♂ 2♀), 28.VIII.2013 (3♂ 3♀), 01.XII.2013 (1♂ 1♀), 19.IV.2014 (4♀), 10.V.2014 (1♂ 2♀), 07.VI.2014 (3♂ 1♀). Helvadere 2 (38°10'07"N, 34°11'54"E), 1642m, 23.VII.2013 (2♂), 28.VIII.2013 (3♂ 2♀), 01.XII.2013 (2♂ 2♀), 19.IV.2014 (1♀), 10.V.2014 (2♂ 3♀), 07.VI.2014 (3♂ 2♀). Hasan Mountain 2 (38°09'05"N, 34°10'50"E), 1859m, 23.VII.2013 (1♂ 2♀), 28.VIII.2013 (3♂ 3♀), 01.XII.2013 (1♂), 19.IV.2014 (2♂ 1♀), 10.V.2014 (3♂ 2♀), 07.VI.2014 (2♂ 2♀). Hasan Mountain 3 (38°09'16"N, 34°09'49"E), 2050m, 23.VII.2013 (2♂ 4♀), 01.XII.2013 (1♂ 3♀), d)19.IV.2014 (2♂ 2♀), 10.V.2014 (1♂ 1♀), 07.VI.2014 (3♂ 1♀). Helvadere Doğu (38°10'34"N, 34°10'53"E), 1650m, 23.VII.2013 (1♀), 28.VIII.2013 (2♂ 1♀), 01.XII.2013 (2♂ 2♀), 19.IV.2014 (3♂ 2♀), 10.V.2014 (4♂ 3♀), 07.VI.2014 (1♂ 1♀). Helvadere–Yenipınar (38°10'76"N, 34°13'94"E), 1660m, 23.VII.2013 (2♂), 28.VIII.2013 (3♂ 5♀), 01.XII.2013 (3♂), 19.IV.2014 (4♀), 10.V.2014 (2♂ 1♀), 07.VI.2014 (3♂ 4♀). Yenipınar Kuzey (38°09'44"N, 34°13'83"E), 1806m, 23.VII.2013 (2♂ 2♀), 28.VIII.2013 (2♂ 3♀), 01.XII.2013 (3♂ 3♀), 19.IV.2014 (2♂ 4♀), 10.V.2014 (1♂ 1♀), 07.VI.2014 (5♂ 4♀). Küçük Hasan Mountain 1 (38°08'23"N, 34°14'15"E), 1868m, 23.VII.2013 (3♂ 2♀), 28.VIII.2013 (3♂ 3♀), 01.XII.2013 (2♂ 2♀), 19.IV.2014 (2♂ 4♀), 10.V.2014 (4♂), 07.VI.2014 (1♂ 1♀). Küçük Hasan Mountain 2 (38°08'13"N, 34°14'49"E), 2089 m, 23.VII.2013 (3♂), 28.VIII.2013 (1♂ 2♀), 01.XII.2013 (3♂ 2♀), 19.IV.2014 (3♂ 4♀), 10.V.2014 (3♂ 1♀), 07.VI.2014 (4♂ 2♀). Hasan Mountain 4 (38°09'88"N, 34°11'42"E), 2138m, 23.VII.2013 (2♂), 28.VIII.2013 (2♀), 01.XII.2013 (4♀), 19.IV.2014 (1♀), 10.V.2014 (2♂ 2♀), 07.VI.2014 (3♂ 4♀).

World Distribution: Palearctic.

***Drassodes lutescens* (C.L. Koch, 1839)**

Material examined: Akçakent 1 (38°05'37"N, 34°05'72"E), 1485m, 01.XII.2013 (1♂), 19.IV.2014 (3♂ 1♀), 10.V.2014 (2♂). Akçakent 3 (38°06'86"N, 34°06'55"E), 1630m, 01.XII.2013 (3♂ 2♀), 19.IV.2014 (2♂ 1♀).

World Distribution: Mediterranean to Pakistan.

Drassodes pubescens (Thorell, 1856)

Material examined: Dikmen–Gözlükuyu (38°09'67"N, 34°07'40"E), 1587m, 23.VII.2013 (1♀), 10.V.2014 (2♀), 07.VI.2014 (2♀). Helvadere Doğu (38°10'34"N, 34°10'53"E), 1650m, 19.IV.2014 (2♀), 10.V.2014 (1♀), 07.VI.2014 (2♀).

World Distribution: Palearctic.

Drassyllus Chamberlin, 1922

Drassyllus crimeaensis Kovblyuk, 2003

Material examined: Akçakent 3 (38°06'86"N, 34°06'55"E), 1630m, 23.VII.2013 (1♀), 07.VI.2014 (1♀).

World Distribution: Macedonia, Greece, Ukraine, Turkey, Russia, Azerbaijan.

Drassyllus praeficus (L. Koch, 1866)

Material examined: Akçakent 3 (38°06'86"N, 34°06'55"E), 1630m, 23.VII.2013 (2♂ 2♀), 07.VI.2014 (1♂). Karacaören 3 (38°07'47"N, 34°06'30"E), 1680m, 28.VIII.2013 (1♂), 07.VI.2014 (2♂ 1♀). Yukarı Dikmen village 1 (38°08'38"N, 34°06'28"E), 1600m, 23.VII.2013 (3♂ 2♀). Dikmen–Gözlükuyu (38°09'67"N, 34°07'40"E), 1587m, 23.VII.2013 (2♂ 2♀), 10.V.2014 (2♀), 07.VI.2014 (1♂ 2♀). Helvadere–Yenipınar (38°10'76"N, 34°13'94"E), 1660m, 23.VII.2013 (2♂), 28.VIII.2013 (1♂ 2♀), 01.XII.2013 (1♀). **World Distribution:** Europe to Central Asia.

Gnaphosa Latreille, 1804

Gnaphosa opaca Herman, 1879

Material examined: Karakapı 3 (38°05'32"N, 34°10'87"E), 1867m, 23.VII.2013 (2♀), 28.VIII.2013 (1♀), 01.XII.2013 (1♀), 07.VI.2014 (1♀). Hasan Mountain 1 (38°06'08"N, 34°09'20"E), 2204m, 23.VII.2013 (1♀), 28.VIII.2013 (2♀), 01.XII.2013 (2♀). Karakapı 4 (38°05'55"N, 34°09'86"E), 1950m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀), 01.XII.2013 (2♀), 07.VI.2014 (1♀). Yukarı Dikmen village 2 (38°09'50"N, 34°07'33"E), 1770m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀), 01.XII.2013 (1♀), 07.VI.2014 (1♀). Helvadere 3 (38°09'68"N, 34°11'72"E), 1787m, 23.VII.2013 (1♀), 28.VIII.2013 (2♀), 01.XII.2013 (1♀). Hasan Mountain 2 (38°09'05"N, 34°10'50"E), 1859m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀), 01.XII.2013 (1♀). Hasan Mountain 3 (38°09'16"N, 34°09'49"E), 2050m, 23.VII.2013 (2♀), 28.VIII.2013 (2♀), 01.XII.2013 (1♀). Helvadere Doğu (38°10'34"N, 34°10'53"E), 1650m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀), 01.XII.2013 (1♀), 19.IV.2014 (2♀), 10.V.2014 (1♀), 07.VI.2014 (1♀). Yenipınar Kuzey (38°09'44"N, 34°13'83"E), 1806m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀), 01.XII.2013 (2♀), 07.VI.2014 (1♀). Yenipınar (38°10'77"N, 34°14'04"E), 1736m, 23.VII.2013 (1♀), 28.VIII.2013 (2♀), 01.XII.2013 (1♀), 07.VI.2014 (1♀). Küçük Hasan Mountain 1 (38°08'23"N, 34°14'15"E), 1868m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀), 01.XII.2013 (1♀). Küçük Hasan Mountain 2 (38°08'13"N, 34°14'49"E), 2089m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀), 01.XII.2013 (2♀). Hasan Mountain 4 (38°09'88"N, 34°11'42"E), 2138m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀), 01.XII.2013 (2♀), 07.VI.2014 (1♀).

World Distribution: Europe to Central Asia.

Haplodrassus Chamberlin, 1922

Haplodrassus invalidus (O.P.-Cambridge, 1872)

Material examined: Yukarı Dikmen village 1 (38°08'38"N, 34°06'28"E), 1600m, 23.VII.2013 (2♂), 10.V.2014 (1♂), 07.VI.2014 (3♂).

World Distribution: Spain, Corsica, Sicily, Italy, Turkey, Israel, Azerbaijan.

Haplodrassus morosus (O.P.-Cambridge, 1872)

Material examined: Karakapı 3 (38°05'32"N, 34°10'87"E), 1867m, 19.IV.2014 (2♂ 2♀), 10.V.2014 (1♂ 1♀). Hasan Mountain 2 (38°09'05"N, 34°10'50"E), 1859m, 19.IV.2014 (2♂), 10.V.2014 (2♂ 1♀). Yenipınar Kuzey (38°09'44"N, 34°13'83"E), 1806m 19.IV.2014 (1♀), 10.V.2014 (2♂ 1♀). Yenipınar (38°10'77"N, 34°14'04"E), 1736m, 19.IV.2014 (2♂ 1♀), 10.V.2014 (1♂ 2♀). Küçük Hasan Mountain 1 (38°08'23"N, 34°14'15"E), 1868m, 19.IV.2014 (2♂).

World Distribution: Greece, Turkey, Israel, Karakorum.

Haplodrassus signifer (C.L. Koch, 1839)

Material examined: Karakapı 3 (38°05'32"N, 34°10'87"E), 1867m, 23.VII.2013 (2♂ 2♀), 28.VIII.2013 (2♂ 1♀). Yukarı Dikmen village 2 (38°09'50"N, 34°07'33"E), 1770m, 23.VII.2013 (1♂ 1♀). Yenipınar Kuzey (38°09'44"N, 34°13'83"E), 1806m, 23.VII.2013 (3♂ 2♀), 28.VIII.2013 (1♂ 1♀). Yenipınar (38°10'77"N, 34°14'04"E), 1736m, 23.VII.2013 (3♀), 07.VI.2014 (2♀). **World Distribution:** Holarctic.

Micaria Westring, 1851

Micaria albovittata (Lucas, 1846)

Material examined: Akçakent–Karacaören 2 (38°06'12"N, 34°05'56"E), 1513m, 23.VII.2013 (2♀), 28.VIII.2013 (1♀) 07.VI.2014 (1♀). Karacaören 1 (38°07'98"N, 34°04'63"E), 1300m, 23.VII.2013 (1♂ 1♀), 28.VIII.2013 (1♀), 07.VI.2014 (2♀).

World Distribution: Palaearctic.

Micaria coarctata (Lucas, 1846)

Material examined: Küçük Hasan Mountain 2 (38°08'13"N, 34°14'49"E), 2089m, 23.VII.2013 (2♀), 28.VIII.2013 (1♀).

World Distribution: Mediterranean to Central Asia.

Micaria formicaria (Sundevall, 1831)

Material examined: Karakapı 1 (38°03'82"N, 34°09'53"E), 1450m, 23.VII.2013 (2♂ 1♀), 07.VI.2014 (2♂ 2♀). Akçakent–Karacaören 2 (38°06'12"N, 34°05'56"E), 1513m, 23.VII.2013 (1♂ 1♀), 07.VI.2014 (2♀). **World Distribution:** Palaearctic.

Nomisia Dalmas, 1921

Nomisia aussereri (L. Koch, 1872)

Material examined: Karakapı 2 (38°04'48"N, 34°10'17"E), 1604m, 28.VIII.2013 (2♀), 01.XII.2013 (2♀). Hasan Mountain 1 (38°06'08"N, 34°09'20"E), 2204m, 28.VIII.2013 (1♀), 01.XII.2013 (2♀). Keçikalesi 2 (38°05'61"E, 34°08'29"E), 1750m 28.VIII.2013 (1♀), 01.XII.2013 (1♀). **World Distribution:** Palaearctic.

Nomisia conigera (Spassky, 1941)

Material examined: Karkın 1 (38°11'47"N, 34°09'20"E), 1310m, 23.VII.2013 (1♀), 07.VI.2014 (1♀). **World Distribution:** Turkey to Central Asia.

Nomisia exornata (C.L. Koch, 1839)

Material examined: Helvadere–Yenipınar (38°10'76"N, 34°13'94"E), 1660m, 23.VII.2013 (2♂ 1♀). Yenipınar Kuzey (38°09'44"N, 34°13'83"), 1806m, 23.VII.2013 (1♂ 3♀), 07.VI.2014 (2♀). **World Distribution:** Europe to Central Asia.

Nomisia ripariensis (O.P.-Cambridge, 1872)

Material examined: Karakapı 2 (38°04'48"N, 34°10'17"E), 1604m, 23.VII.2013 (3♂ 2♀), 10.V.2014 (2♂ 1♀), 07.VI.2014 (1♂). Akçakent 1 (38°05'37"N, 34°05'72"E), 1485m, 28.VIII.2013 (3♂ 3♀). Akçakent 3 (38°06'86"N, 34°06'55"E), 1630m, 23.VII.2013 (1♂ 1♀), 07.VI.2014 (2♀). Gözlükuyu 1 (38°10'28"N, 34°06'40"E), 1310m, 23.VII.2013 (3♂ 2♀), 10.V.2014 (3♂ 3♀), 07.VI.2014 (3♂ 2♀). Karkın 1 (38°11'47"N, 34°09'20"E), 1310m, 23.VII.2013 (2♂ 3♀), 07.VI.2014 (1♂ 3♀).

World Distribution: Bulgaria, Greece, Crete to Azerbaijan.

Phaeocedus Simon, 1893

Phaeocedus braccatus (L. Koch, 1866)

Material examined: Yenipınar Kuzey (38°09'44"N, 34°13'83"E), 1806m, 28.VIII.2013 (1♀), 10.V.2014 (1♂ 2♀), 07.VI.2014 (1♂ 1♀). **World Distribution:** Palearctic.

Poecilochroa Westring, 1874

Poecilochroa variana (C.L. Koch, 1839)

Material examined: Karakapı 4 (38°05'55"N, 34°09'86"E), 1950m, 10.V.2014 (1♂ 2♀), 07.VI.2014 (1♂ 3♀). **World Distribution:** Europe to Central Asia.

Pterotricha Kulczyński, 1903

Pterotricha kochi (O.P.-Cambridge, 1872)

Material examined: Yukarı Dikmen village 1 (38°08'38"N, 34°06'28"E), 1600m, 10.V.2014 (1♀), 07.VI.2014 (1♀). **World Distribution:** Turkey, Lebanon, Syria, Israel.

Zelotes Gistel, 1848

Zelotes cingarus (O.P.-Cambridge, 1874)

Material examined: Keçikalesi–Akçakent (38°04'51"N, 34°06'73"E), 1724m, 23.VII.2013 (1♀), 07.VI.2014 (2♀). Dikmen–Gözlükuyu (38°09'67"N, 34°07'40"E), 1587m, 23.VII.2013 (2♀), 28.VIII.2013 (1♀), 07.VI.2014 (2♀). **World Distribution:** Macedonia, Bulgaria, Greece, Crete, Corfu Island, Turkey, Tajikistan.

Zelotes longipes (L. Koch, 1866)

Material examined: Gözlükuyu 1 (38°10'28"N, 34°06'40"E), 1310m, 23.VII.2013 (2♂ 1♀). Hasan Mountain 3 (38°09'16"N, 34°09'49"E), 2050m, 23.VII.2013 (2♂), 07.VI.2014 (1♂). Küçük Hasan Mountain 2 (38°08'13"N, 34°14'49"E), 2089m, 23.VII.2013 (1♂ 1♀), 07.VI.2014 (2♂ 2♀). **World Distribution:** Palearctic.

Zelotes subterraneus (C.L. Koch, 1833)

Material examined: Dikmen–Gözlükuyu (38°09'67"N, 34°07'40"E), 1587m, 28.VIII.2013 (1♂). **World Distribution:** Palearctic.

Family Liocranidae

Mesiotelus Simon, 1897

Mesiotelus scopensis Drensky, 1935

Material examined: Akçakent–Karacaören 2 (38°06'12"N, 34°05'56"E), 1513m, 23.VII.2013 (1♀), 01.XII.2013 (1♀). Gözlükuyu 2 (38°10'86"N, 34°07'39"E), 1610m, 23.VII.2013 (2♀), 01.XII.2013 (1♀).

World Distribution: Greece, Bulgaria, Macedonia, Turkey, Iran.

Family Linyphiidae

Frontinellina van Helsdingen, 1969

Frontinellina frutetorum (C.L. Koch, 1834)

Material examined: Akçakent 3 (38°06'86"N, 34°06'55"E), 1630m, 23.VII.2013 (1♂), 07.VI.2014 (1♂). **World Distribution:** Palearctic.

Lepthyphantes Menge, 1866

Lepthyphantes leprosus (Ohlert, 1865)

Material examined: Karakapı 2 (38°04'48"N, 34°10'17"E), 1604m, 28.VIII.2013 (1♀). Keçikalesi–Akçakent (38°04'51"N, 34°06'73"E), 1724m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀). Akçakent–Karacaören 2 (38°06'12"N, 34°05'56"E), 1513m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀). **World Distribution:** Holarctic, Chile.

Megalepthyphantes Wunderlich, 1994

Megalepthyphantes nebulosus (Sundevall, 1830)

Material examined: Dikmen–Gözlükuyu (38°09'67"N, 34°07'40"E), 1587m, 28.VIII.2013 (1♀), 01.XII.2013 (2♀), 9.IV.2014 (1♀). Helvadere 1 (38°11'30"N, 34°12'20"E), 1495m 28.VIII.2013 (1♀), 01.XII.2013 (2♀), 19.IV.2014 (1♂ 1♀). Hasan Mountain 3 (38°09'16"N, 34°09'49"E), 2050m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀), 01.XII.2013 (1♀), 07.VI.2014 (2♀). Küçük Hasan Mountain 2 (38°08'13"N, 34°14'49"E), 2089m, 23.VII.2013 (2♀), 28.VIII.2013 (1♀), 01.XII.2013 (1♀). Hasan Mountain 4 (38°09'88"N, 34°11'42"E), 2138m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀), 01.XII.2013 (1♀). **World Distribution:** Holarctic.

Nerienne Blackwall, 1833

Nerienne peltata (Wider, 1834)

Material examined: Keçikalesi 2 (38°05'61"N, 34°08'29"E), 1750m, 28.VIII.2013 (2♂ 5♀). **World Distribution:** Palearctic, Greenland.

Family Lycosidae

Alopecosa Simon, 1885

Alopecosa accentuata (Latreille, 1817)

Material examined: Hasan Mountain 1 (38°06'08"N, 34°09'20"E), 2204m, 19.IV.2014 (1♂), 10.V.2014 (1♂). Hasan Mountain 2 (38°09'05"N, 34°10'50"E), 1859m, 19.IV.2014 (1♂). Küçük Hasan Mountain 1 (38°08'23"N, 34°14'15"E), 1868m 19.IV.2014 (1♂). **World Distribution:** Palearctic.

Alopecosa cursor (Hahn, 1831)

Material examined: Keçikalesi–Akçakent (38°04'51"N, 34°06'73"E), 1724m, 19.IV.2014 (2♂ 2♀), 10.V.2014 (3♂ 2♀). Hasan Mountain 2 (38°09'05"N, 34°10'50"E), 1859m, 19.IV.2014 (3♀). Hasan Mountain 3 (38°09'16"N, 34°09'49"E), 2050m, 19.IV.2014 (4♂ 2♀). Küçük Hasan Mountain 1 (38°08'23"N, 34°14'15"E), 1868m, 19.IV.2014 (2♂ 1♀). Küçük Hasan Mountain 2 (38°08'13"N, 34°14'49"E), 2089m 19.IV.2014 (3♂ 2♀). Hasan Mountain 4 (38°09'88"N, 34°11'42"E), 2138m, 19.IV.2014 (4♂ 2♀). **World Distribution:** Palearctic.

Alopecosa pulverulenta (Clerck, 1757)

Material examined: Keçikalesi 2 (38°05'61"N, 34°08'29"E), 1750m, 19.IV.2014 (1♂), 10.V.2014 (3♂), 07.VI.2014 (2♂). Keçikalesi–Akçakent (38°04'51"N, 34°06'73"E), 1724m, 19.IV.2014 (2♂), 10.V.2014 (1♂). Küçük Hasan Mountain 2 (38°08'13"N,

34°14'49"E), 2089m d)19.IV.2014 (2♂). Hasan Mountain 4 (38°09'88"N, 34°11'42"E), 2138m, 19.IV.2014 (1♂). **World Distribution:** Palaearctic.

Hogna Simon, 1885

Hogna radiata (Latreille, 1817)

Material examined: Karakapı 3 (38°05'32"N, 34°10'87"E), 1867m, 23.VII.2013 (4♀), 28.VIII.2013 (2♀). Keçikalesi 2 (38°05'61"N, 34°08'29"E), 1750m, 23.VII.2013 (1♀). Keçikalesi-Akçakent (38°04'51"N, 34°06'73"E), 1724 m, 23.VII.2013 (2♀), 07.VI.2014 (3♀). Akçakent 3 (38°06'86"N, 34°06'55"E), 1630m, 23.VII.2013 (5♀), 28.VIII.2013 (2♀). **World Distribution:** Central Europe to Central Asia, Iran, Central Africa.

Lycosa Latreille, 1804

Lycosa praegrandis C.L. Koch, 1836

Material examined: Akçakent 3 (38°06'86"N, 34°06'55"E), 1630m, 23.VII.2013 (2♀), 28.VIII.2013 (1♀). Yukarı Dikmen village 2 (38°09'50"N, 34°07'33"E), 1770m, 23.VII.2013 (1♀), 28.VIII.2013 (2♀). Hasan Mountain 3 (38°09'16"N, 34°09'49"E), 2050m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀). Hasan Mountain 4 (38°09'88"N, 34°11'42"E), 2138m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀).

World Distribution: Greece to Central Asia.

Pardosa C.L. Koch, 1847

Pardosa agrestis (Westring, 1861)

Material examined: Karakapı 3 (38°05'32"N, 34°10'87"E), 1867m, 23.VII.2013 (6♀), 28.VIII.2013 (5♀). Keçikalesi 2 (38°05'61"N, 34°08'29"E), 1750m, 23.VII.2013 (4♀), 28.VIII.2013 (6♀), 07.VI.2014 (3♂ 2♀). Keçikalesi-Akçakent (38°04'51"N, 34°06'73"E), 1724m, 23.VII.2013 (5♂ 3♀), 28.VIII.2013 (2♂ 1♀), 07.VI.2014 (3♂ 2♀). Karacaören 3 (38°07'47"N, 34°06'30"E), 1680m, 23.VII.2013 (4♀), 28.VIII.2013 (2♂ 5♀), 07.VI.2014 (4♀). **World Distribution:** Palaearctic.

Pardosa agricola (Thorell, 1856)

Material examined: Keçikalesi 1 (38°04'37"N, 34°08'26"E), 1534m, 23.VII.2013 (1♀), 07.VI.2014 (1♀). Akçakent 2 (38°05'10"N, 34°06'34"E), 1550m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀), 07.VI.2014 (1♀). Akçakent-Karacaören 3 (38°07'88"N, 34°04'26"E), 1272m, 23.VII.2013 (1♀), 07.VI.2014 (1♀). Karacaören 1 (38°07'98"N, 34°04'63"E), 1300m, 23.VII.2013 (1♀), 07.VI.2014 (1♀). **World Distribution:** Europe to Kazakhstan.

Pardosa proxima (C.L. Koch, 1847)

Material examined: Keçikalesi-Akçakent (38°04'51"N, 34°06'73"E), 1724m, 23.VII.2013 (2♀), 28.VIII.2013 (1♀). Akçakent 3 (38°06'86"N, 34°06'55"E), 1630m, 23.VII.2013 (4♀), 28.VIII.2013 (2♀). Akçakent-Karacaören 1 (38°05'18"N, 34°05'04"E), 1400m, 23.VII.2013 (1♀), 28.VIII.2013 (2♀), 01.XII.2013 (1♀). Gözlükuyu-Karkın 1 (38°11'36"N, 34°08'43"E), 1360m, 23.VII.2013 (1♀), 28.VIII.2013 (3♀), 01.XII.2013 (2♀). Helvadere 3 (38°09'68"N, 34°11'72"E), 1787m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀). **World Distribution:** Palaearctic, Canary Islands, Azores.

Trochosa C.L. Koch, 1847

Trochosa hispanica Simon, 1870

Material examined: Akçakent 1 (38°05'37"N, 34°05'72"E), 1485m, 28.VIII.2013 (1♀).

World Distribution: Mediterranean to Central Asia, Iran.

***Trochosa spinipalpis* (F.O.P.-Cambridge, 1895)**

Material examined: Yukarı Dikmen village 1 (38°08'38"N, 34°06'28"E), 1600m, 23.VII.2013 (1♀), 28.VIII.2013 (2♀). **World Distribution:** Palaearctic.

Family Miturgidae

***Zora* C.L. Koch, 1847**

***Zora spinimana* (Sundevall, 1833)**

Material examined: Keçikalesi–Akçakent (38°04'51"N, 34°06'73"E), 1724m, 23.VII.2013 (1♀). **World Distribution:** Palaearctic.

Family Oecobiidae

***Oecobius* Lucas, 1846**

***Oecobius rhodiensis* Kritscher 1966**

Material examined: Akçakent 2 (38°05'10"N, 34°06'34"E), 1550m, 23.VII.2013 (1♂), 28.VIII.2013 (1♂). **World Distribution:** Greece, Crete, Turkey.

***Uroctea* Dufour, 1820**

***Uroctea durandi* (Latreille, 1809)**

Material examined: Karakapı 3 (38°05'32"N, 34°10'87"E), 1867m, 23.VII.2013 (2♂ 2♀), 28.VIII.2013 (2♂ 1♀), 01.XII.2013 (1♂). Hasan Mountain 1 (38°06'08"N, 34°09'20"E), 2204m, 23.VII.2013 (2♂ 1♀), 28.VIII.2013 (1♂ 1♀). Keçikalesi 3 (38°05'42"N, 34°08'49"E), 1950m, 23.VII.2013 (2♀), 28.VIII.2013 (1♂ 2♀). Akçakent 1 (38°05'37"N, 34°05'72"E), 1485m, 23.VII.2013 (2♂ 2♀), 28.VIII.2013 (2♂ 1♀). Karacaören 1 (38°07'98"N, 34°04'63"E), 1300m, 23.VII.2013 (1♂ 1♀), 28.VIII.2013 (1♀), 01.XII.2013 (2♂). Karacaören 3 (38°07'47"N, 34°06'30"E), 1680m, 23.VII.2013 (1♀), 28.VIII.2013 (2♂ 2♀). Yukarı Dikmen village 1 (38°08'38"N, 34°06'28"E), 1600m, 23.VII.2013 (2♂ 1♀), 28.VIII.2013 (1♂ 1♀). Yukarı Dikmen village 2 (38°09'50"N, 34°07'33"E), 1770m, 23.VII.2013 (2♂ 2♀), 28.VIII.2013 (1♂ 1♀). Dikmen–Gözlükuyu (38°09'67"N, 34°07'40"E), 1587m, 23.VII.2013 (1♀), 28.VIII.2013 (2♀). Hasan Mountain 3 (38°09'16"N, 34°09'49"E), 2050 m, 23.VII.2013 (1♂ 2♀), 28.VIII.2013 (2♂ 2♀). **World Distribution:** Mediterranean.

Family Oxyopidae

***Oxyopes* Latreille, 1804**

***Oxyopes lineatus* Latreille, 1806**

Material examined: Akçakent 1 (38°05'37"N, 34°05'72"E), 1485m, 23.VII.2013 (1♀), 28.VIII.2013 (3♀). Karacaören 3 (38°07'47"N, 34°06'30"E), 1680m, 28.VIII.2013 (2♀).

World Distribution: Palaearctic.

***Oxyopes ramosus* (Martini & Goeze, 1778)**

Material examined: Karacaören 1 (38°07'98"N, 34°04'63"E), 1300m, 23.VII.2013 (2♂ 2♀), 28.VIII.2013 (2♀). Dikmen–Gözlükuyu (38°09'67"N, 34°07'40"E), 1587m, 23.VII.2013 (1♀), 28.VIII.2013 (2♀), 07.VI.2014 (2♂ 2♀).

World Distribution: Palaearctic.

Family Palpimanidae

***Palpimanus* Dufour, 1820**

***Palpimanus uncatus* Kulczyński, 1909**

Material examined: Karakapı 1 (38°03'82"N, 34°09'53"E), 1450m, 23.VII.2013 (2♂ 1♀), 28.VIII.2013 (1♂ 2♀), 01.XII.2013 (1♂), 19.IV.2014 (1♀), 10.V.2014 (1♂ 2♀),

07.VI.2014 (2♂ 1♀). Karakapı 2 (38°04'48"N, 34°10'17"E), 1604m, 23.VII.2013 (2♂ 2♀), 28.VIII.2013 (1♀), 01.XII.2013 (1♀), 19.IV.2014 (1♂), 10.V.2014 (1♀), 07.VI.2014 (1♂ 2♀). Karakapı 3 (38°05'32"N, 34°10'87"E), 1867m, 23.VII.2013 (1♂), 28.VIII.2013 (1♂), 01.XII.2013 (2♀), 19.IV.2014 (1♂ 1♀), 10.V.2014 (2♂ 2♀), 07.VI.2014 (1♂). Keçikalesi 1 (38°04'37"N, 34°08'26"E), 1534m, 23.VII.2013 (1♂ 1♀), 28.VIII.2013 (2♂ 1♀), 01.XII.2013 (1♂), 19.IV.2014 (1♀), 10.V.2014 (2♀), 07.VI.2014 (2♂ 2♀). Keçikalesi 2 (38°05'61"N, 34°08'29"E), 1750m, 23.VII.2013 (1♂), 28.VIII.2013 (1♂), 01.XII.2013 (1♀), 19.IV.2014 (2♀), 10.V.2014 (2♂ 1♀), 07.VI.2014 (2♂ 2♀). Keçikalesi 3 (38°05'42"N, 34°08'49"E), 1950m, 23.VII.2013 (1♂), 28.VIII.2013 (1♀), 01.XII.2014 (1♀), 19.IV.2014 (1♀), 10.V.2014 (2♂ 1♀), 07.VI.2014 (2♂ 2♀). Keçikalesi–Akçakent (38°04'51"N, 34°06'73"E), 1724m, 23.VII.2013 (1♀), 28.VIII.2013 (1♂), 01.XII.2013 (1♂ 2♀), 19.IV.2014 (1♂), 10.V.2014 (2♀), 07.VI.2014 (1♂ 1♀). Akçakent 1 (38°05'37"N, 34°05'72"E), 1485m, 23.VII.2013 (1♂ 1♀), 28.VIII.2013 (1♂), 01.XII.2013 (2♂ 1♀), 19.IV.2014 (1♂), 10.V.2014 (1♀), 07.VI.2014 (1♀). Akçakent 2 (38°05'10"N, 34°06'34"E), 1550m, 23.VII.2013 (2♀), 28.VIII.2013 (1♂ 2♀), 01.XII.2013 (2♂ 2♀), 19.IV.2014 (2♂ 1♀), 10.V.2014 (2♂ 2♀), 07.VI.2014 (1♀). Akçakent 3 (38°06'86"N, 34°06'55"E), 1630m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀), 01.XII.2013 (2♀), 19.IV.2014 (2♀), 10.V.2014 (1♀), 07.VI.2014 (1♀). Akçakent–Karacaören 1 (38°05'18"N, 34°05'04"E), 1400m, 23.VII.2013 (1♂ 2♀), 28.VIII.2013 (1♂ 1♀), 01.XII.2013 (1♀), 19.IV.2014 (2♀), 10.V.2014 (1♀), 07.VI.2014 (1♂ 1♀). Akçakent–Karacaören 2 (38°06'12"N, 34°05'56"E), 1513m, 23.VII.2013 (1♀), 28.VIII.2013 (2♀), 01.XII.2013 (1♂ 1♀), 19.IV.2014 (1♂, 1♀), 10.V.2014 (2♂ 1♀), 07.VI.2014 (1♂ 2♀). Akçakent–Karacaören 3 (38°07'88"N, 34°04'26"E), 1272m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀), 01.XII.2013 (1♀), 19.IV.2014 (2♂ 2♀), 10.V.2014 (1♂ 1♀), 07.VI.2014 (1♀). Karacaören 1 (38°07'98"N, 34°04'63"E), 1300m, 23.VII.2013 (1♂ 1♀), 28.VIII.2013 (1♂ 1♀), 01.XII.2013 (2♂ 2♀), 19.IV.2014 (1♀), 10.V.2014 (2♀), 07.VI.2014 (1♀). Karacaören 2 (38°08'43"N, 34°05'55"E), 1407m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀), 01.XII.2013 (1♀), 19.IV.2014 (1♀), 10.V.2014 (2♀), 07.VI.2014 (1♀). Karacaören 3 (38°07'47"N, 34°06'30"E), 1680m, 23.VII.2013 (1♂ 1♀), 28.VIII.2013 (2♀), 01.XII.2013 (1♂ 1♀), 19.IV.2014 (1♀), 10.V.2014 (1♀), 07.VI.2014 (1♀). Aşağı Dikmen village (38°09'34"N, 34°05'25"E), 1410m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀), 01.XII.2013 (1♂ 1♀), 19.IV.2014 (1♀), 10.V.2014 (2♀), 07.VI.2014 (2♂ 2♀). Yukarı Dikmen village 1 (38°08'38"N, 34°06'28"E), 1600m, 23.VII.2013 (1♂ 1♀), 28.VIII.2013 (1♀), 01.XII.2013 (1♀), 19.IV.2014 (1♀), 10.V.2014 (1♀), 07.VI.2014 (1♀). Yukarı Dikmen village 2 (38°09'50"N, 34°07'33"E), 1770m, 23.VII.2013 (2♀), 28.VIII.2013 (1♂ 1♀), 01.XII.2013 (2♂ 2♀), 19.IV.2014 (1♂ 2♀), 10.V.2014 (1♀), 07.VI.2014 (1♀). Dikmen–Gözlükuyu (38°09'67"N, 34°07'40"E), 1587m, 23.VII.2013 (1♂ 1♀), 28.VIII.2013 (1♀), 01.XII.2013 (1♀), 19.IV.2014 (2♂ 1♀), 10.V.2014 (1♀), 07.VI.2014 (1♂ 1♀). Gözlükuyu 1 (38°10'28"N, 34°06'40"E), 1310m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀), 01.XII.2013 (2♀), 19.IV.2014 (1♀), 10.V.2014 (2♂ 1♀), 07.VI.2014 (1♂ 2♀). Gözlükuyu 2 (38°10'86"N, 34°07'39"E), 1610m, 23.VII.2013 (2♂ 2♀), 28.VIII.2013 (1♂ 1♀), 01.XII.2013 (1♀), 19.IV.2014 (1♀), 10.V.2014 (2♀), 07.VI.2014 (1♀). Gözlükuyu 3 (38°10'33"N, 34°07'14"E), 1474m, 23.VII.2013 (1♀), 28.VIII.2013 (2♀), 01.XII.2013 (2♂ 2♀), 19.IV.2014 (1♂ 1♀), 10.V.2014 (1♀), 07.VI.2014 (1♀). Gözlükuyu–Karkın 1 (38°11'36"N, 34°08'43"E), 1360m, 23.VII.2013 (1♀), 28.VIII.2013 (2♀), 01.XII.2013 (1♂ 1♀), 19.IV.2014 (2♂ 2♀), 10.V.2014 (1♀), 07.VI.2014 (1♀). Gözlükuyu–Karkın 2 (38°11'60"N, 34°09'91"E), 1455m, 23.VII.2013 (1♂ 1♀), 28.VIII.2013 (1♀), 01.XII.2013 (1♀), 19.IV.2014 (2♀), 10.V.2014 (2♂ 2♀), 07.VI.2014 (1♂ 1♀). Karkın 1 (38°11'47"N, 34°09'20"E), 131 m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀), 01.XII.2013 (1♀), 19.IV.2014 (2♂ 1♀), 10.V.2014

(2♀), 07.VI.2014 (2♀). Karkın 2 (38°10'61"N, 34°10'89"E), 1403m, 23.VII.2013 (1♂ 1♀), 28.VIII.2013 (1♀), 01.XII.2013 (1♀), 19.IV.2014 (1♀), 10.V.2014 (1♂ 1♀), 07.VI.2014 (1♂ 1♀). Karkın-Helvadere (38°11'22"N, 34°10'28"E), 1405m, 23.VII.2013 (1♂ 1♀), 28.VIII.2013 (1♀), 01.XII.2013 (2♀), 19.IV.2014 (1♀), 10.V.2014 (1♀), 07.VI.2014 (2♀). Helvadere 1 (38°11'30"N, 34°12'20"E), 1495m, 23.VII.2013 (1♀), 28.VIII.2013 (2♀), 01.XII.2013 (1♀), 19.IV.2014 (2♂ 1♀), 10.V.2014 (2♀), 07.VI.2014 (1♀). Helvadere 2 (38°10'07"N, 34°11'54"E), 1642m, 23.VII.2013 (1♂ 1♀), 28.VIII.2013 (2♂ 1♀), 01.XII.2013 (1♂ 2♀), 19.IV.2014 (1♂ 1♀), 10.V.2014 (1♀), 07.VI.2014 (2♀). Helvadere 3 (38°09'68"N, 34°11'72"E), 1787m, 23.VII.2013 (2♂ 2♀), 28.VIII.2013 (1♀), 01.XII.2013 (1♀), 19.IV.2014 (2♂ 1♀), 10.V.2014 (1♀), 07.VI.2014 (1♂ 1♀). Yenipınar (38°10'77"N, 34°14'04"E), 1736m, 23.VII.2013 (1♀), 28.VIII.2013 (2♀), 01.XII.2013 (2♂ 2♀), 19.IV.2014 (1♀), 10.V.2014 (2♀), 07.VI.2014 (2♂ 2♀). Küçük Hasan Mountain 1 (38°08'23"N, 34°14'15"E), 1868m, 23.VII.2013 (1♀), 28.VIII.2013 (2♀), 01.XII.2013 (1♀), 19.IV.2014 (2♀), 10.V.2014 (2♀), 07.VI.2014 (1♀). **World Distribution:** Egypt, Turkey, Greece.

Family Philodromidae

Philodromus Walckenaer, 1826

Philodromus cespitum (Walckenaer, 1802)

Material examined: Karacaören 2 (38°08'43"N, 34°05'55"E), 1407m, 23.VII.2013 (1♂ 1♀). Yukarı Dikmen village 2 (38°09'50"N, 34°07'33"E), 1770m, 01.XII.2013 (2♀). **World Distribution:** Holarctic.

Pulchellodromus Wunderlich, 2012

Pulchellodromus pulchellus (Lucas, 1846)

Material examined: Keçikalesi 1 (38°04'37"N, 34°08'26"E), 1534m, 23.VII.2013 (2♀), 28.VIII.2013 (1♀). **World Distribution:** Mediterranean.

Thanatus C.L. Koch, 1837

Thanatus atratus Simon, 1875

Material examined: Karacaören 3 (38°07'47"N, 34°06'30"E), 1680m, 23.VII.2013 (1♀). Yukarı Dikmen village 2 (38°09'50"N, 34°07'33"E), 1770m, 23.VII.2013 (2♀). Küçük Hasan Mountain 2 (38°08'13"N, 34°14'49"E), 2089m, 23.VII.2013 (1♀). Hasan Mountain 4 (38°09'88"N, 34°11'42"E), 2138m, 23.VII.2013 (1♀). **World Distribution:** Palearctic.

Thanatus formicinus (Clerck, 1757)

Material examined: Karakapı 2 (38°04'48"N, 34°10'17"E), 1604m, 23.VII.2013 (1♀), 07.VI.2014 (2♀). Hasan Mountain 1 (38°06'08"N, 34°09'20"E), 2204 m, 28.VIII.2013 (1♀). Keçikalesi 2 (38°05'61"N, 34°08'29"E), 1750m, 01.XII.2013 (1♀). Keçikalesi-Akçakent (38°04'51"N, 34°06'73"E), 1724m, 28.VIII.2013 (1♀), 01.XII.2013 (2♀). Karacaören 3 (38°07'47"N, 34°06'30"E), 1680m, 23.VII.2013 (1♀), 07.VI.2014 (2♀). **World Distribution:** Holarctic.

Thanatus oblongiusculus (Lucas, 1846)

Material examined: Karakapı 1 (38°03'82"N, 34°09'53"E), 1450m, 23.VII.2013 (3♂ 2♀), 07.VI.2014 (2♀). Akçakent 2 (38°05'10"N, 34°06'34"E), 1550m, 23.VII.2013 (3♀), 07.VI.2014 (1♂ 1♀). Akçakent-Karacaören 3 (38°07'88"N, 34°04'26"E), 1272m, 23.VII.2013 (1♂ 1♀), 28.VIII.2013 (10♂ 3♀). Hasan Mountain 2 (38°09'05"N, 34°10'50"E), 1859m, 23.VII.2013 (2♂ 2♀), 07.VI.2014 (3♂ 2♀). Yenipınar Kuzey (38°09'44"N, 34°13'83"E), 1806m, 23.VII.2013 (5♀). **World Distribution:** Palearctic.

Thanatus pictus L. Koch, 1881

Material examined: Karakapı 1 (38°03'82"N, 34°09'53"E), 1450m, 01.XII.2013 (2♂ 3♀). Karakapı 2 (38°04'48"N, 34°10'17"E), 1604m 01.XII.2013 (2♂ 3♀). Akçakent–Karacaören 2 (38°06'12"N, 34°05'56"E), 1513m, 28.VIII.2013 (1♂ 1♀). Yukarı Dikmen village 2 (38°09'50"N, 34°07'33"E), 1770m 28.VIII.2013 (2♂ 4♀). Hasan Mountain 2 (38°09'05"N, 34°10'50"E), 1859m, 28.VIII.2013 (4♀). Hasan Mountain3 (38°09'16"N, 34°09'49"E), 2050m 28.VIII.2013 (3♂). Hasan Mountain 4 (38°09'88"N, 34°11'42"E), 2138m, 23.VII.2013 (1♂). **World Distribution:** Palaearctic.

Thanatus vulgaris Simon, 1870

Material examined: Hasan Mountain 1 (38°06'08"N, 34°09'20"E), 2204m, 28.VIII.2013 (2♀). **World Distribution:** Holarctic.

Family Pholcidae

Hoplopholcus Kulczyński, 1908

Hoplopholcus longipes (Spassky, 1934)

Material examined: Akçakent 2 (38°05'10"N, 34°06'34"E), 1550m, 28.VIII.2013 (1♂,2♀). **World Distribution:** Turkey, Russia, Georgia.

Pholcus Walckenaer, 1805

Pholcus turcicus Wunderlich, 1980

Material examined: Akçakent 3 (38°06'86"N, 34°06'55"E), 1630m, 28.VIII.2013 (1♂,1♀). **World Distribution:** Turkey (Endemic).

Family Phrurolithidae

Phrurolithus (C.L. Koch, 1839)

Phrurolithus festivus (C.L. Koch, 1835)

Material examined: Hasan Mountain 2 (38°09'05"N, 34°10'50"E), 1859m, 23.VII.2013 (3♂), 28.VIII.2013(2♂). Yenipınar Kuzey (38°09'44"N, 34°13'83"E), 1806m, 23.VII.2013 (2♂), 28.VIII.2013 (1♂). **World Distribution:** Palaearctic.

Family Salticidae

Aelurillus Simon, 1884

Aelurillus luctuosus (Lucas, 1846)

Material examined: Keçikalesi 3 (38°05'42"N, 34°08'49"E), 1950m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀). Karacaören 2 (38°08'43"N, 34°05'55"E), 1407 m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀). Helvadere 3 (38°09'68"N, 34°11'72"E), 1787m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀). **World Distribution:** Mediterranean to Turkmenistan.

Chalcoscirtus Bertkau, 1880

Chalcoscirtus infimus (Simon, 1868)

Material examined: Keçikalesi 2 (38°05'61"N, 34°08'29"E), 1750m, 23.VII.2013 (1♀). **World Distribution:** Southern, Central Europe to Central Asia.

Cyrba Simon, 1876

Cyrba algerina (Lucas, 1846)

Material examined: Akçakent-Karacaören 1 (38°05'85"N, 34°05'04"E), 1400m, 23.VII.2013 (1♀), 07.VI.2014 (1♀). **World Distribution:** Canary Islands to Central Asia.

Euophrys C.L. Koch, 1834

Euophrys frontalis (Walckenaer, 1802)

Material examined: Keçikalesi-Akçakent (38°04'51"N, 34°06'73"E), 1724m, 23.VII.2013 (1♂), 07.VI.2014 (1♀). **World Distribution:** Palaearctic.

Heliophanus C.L. Koch, 1833

Heliophanus dubius C.L. Koch, 1835

Material examined: Akçakent–Karacaören 1 (38°05'85"N, 34°05'04"E), 1400m, 23.VII.2013 (1♀), 07.VI.2014 (1♀). Yukarı Dikmen village 1 (38°08'38"N, 34°06'28"E), 1600m, 23.VII.2013 (1♀), 07.VI.2014 (1♀). **World Distribution:** Palaearctic.

Heliophanus edentulus Simon, 1871

Material examined: Karacaören 3 (38°07'47"N, 34°06'30"E), 1680m, 01.XII.2013 (1♂). **World Distribution:** Nigeria, Mediterranean to Iran.

Heliophanus lineiventris Simon, 1868

Material examined: Karakapı 3 (38°05'32"N, 34°10'87"E), 1867m, 19.IV.2014 (1♂), 10.V.2014 (2♂). Hasan Mountain 1 (38°06'08"N, 34°09'20"E), 2204m, 19.IV.2014 (1♂), 10.V.2014 (3♂). Karakapı 4 (38°05'55"N, 34°09'86"E), 1950 m 19.IV.2014 (1♂), 10.V.2014 (2♂). Karacaören 3 (38°07'47"N, 34°06'30"E), 1680m, 19.IV.2014 (4♂), 10.V.2014 (2♂). **World Distribution:** Palaearctic.

Pellenes Simon, 1876

Pellenes geniculatus (Simon, 1868)

Material examined: Gözlükuyu-Karkın 2 (38°11'60"N, 34°09'91"E), 1455m, 23.VII.2013 (1♀), 07.VI.2014 (1♀).

World Distribution: Southern Palaearctic, Africa, introduced in Belgium.

Philaeus Thorell, 1869

Philaeus chrysops (Poda, 1761)

Material examined: Karakapı 2 (38°04'48"N, 34°10'17"E), 1604m, 23.VII.2013 (2♂ 1♀), 07.VI.2014 (3♂ 2♀). Karakapı 3 (38°05'32"N, 34°10'87"E), 1867m, 23.VII.2013 (1♂ 3♀), 28.VIII.2013 (2♂ 3♀), 07.VI.2014 (2♂ 2♀). Keçikalesi 1 (38°04'37"N, 34°08'26"E), 1534m, 23.VII.2013 (2♂ 3♀), 07.VI.2014 (4♀). Keçikalesi 2 (38°05'61"N, 34°08'29"E), 1750m, 23.VII.2013 (3♂ 1♀), Keçikalesi–Akçakent (38°04'51"N, 34°06'73"E), 1724m, 23.VII.2013 (2♂ 3♀), 28.VIII.2013 (2♂ 3♀). Akçakent–Karacaören 3 (38°07'88"N, 34°04'26"E), 1272m, 23.VII.2013 (2♂ 1♀), 28.VIII.2013 (3♂ 2♀), 07.VI.2014 (1♂ 2♀). Karacaören 1 (38°07'98"N, 34°04'63"E), 1300m, 23.VII.2013 (4♂ 2♀), 28.VIII.2013 (3♂ 2♀). Karacaören 2 (38°08'43"N, 34°05'55"E), 1407m, 23.VII.2013 (4♂), 28.VIII.2013 (2♂ 4♀), 07.VI.2014 (3♂ 1♀). Aşağı Dikmen village (38°09'34"N, 34°05'25"E), 1410m, 23.VII.2013 (3♂ 2♀), 28.VIII.2013 (2♂ 3♀). Gözlükuyu 3 (38°10'33"N, 34°07'14"E), 1474m, 23.VII.2013 (2♂ 2♀), 28.VIII.2013 (3♂ 2♀), 07.VI.2014 (4♂ 3♀). Gözlükuyu–Karkın 1 (38°11'36"N, 34°08'43"E), 1360m, 23.VII.2013 (3♀). Gözlükuyu-Karkın 2 (38°11'60"N, 34°09'91"E), 1455m, 23.VII.2013 (2♂ 2♀), 28.VIII.2013 (4♂ 3♀), 07.VI.2014 (3♂ 2♀). Karkın 1 (38°11'47"N, 34°09'20"E), 1310m, 23.VII.2013 (3♂ 3♀). Karkın 2 (38°10'61"N, 34°10'89"E), 1403m, 23.VII.2013 (4♂ 3♀), 28.VIII.2013 (2♂ 3♀), 07.VI.2014 (2♂). Helvadere 3 (38°09'68"N, 34°11'72"E), 1787m, 23.VII.2013 (3♂ 2♀), 07.VI.2014 (3♀). Hasan Mountain 2 (38°09'05"N, 34°10'50"E), 1859m, 23.VII.2013 (2♂ 1♀), 07.VI.2014 (3♂ 2♀). Hasan Mountain 3 (38°09'16"N, 34°09'49"E), 2050m, 23.VII.2013 (3♂ 1♀).

28.VIII.2013 (2♂ 3♀), 07.VI.2014 (3♂ 1♀). Helvadere Doğu (38°10'34"N, 34°10'53"E, 1650m, 23.VII.2013 (2♂ 4♀), 28.VIII.2013 (3♂), 07.VI.2014 (3♂ 1♀). Helvadere-Yenipınar (38°10'76"N, 34°13'94"E), 1660m, 23.VII.2013 (2♂ 3♀), 28.VIII.2013 (3♀). **World Distribution:** Palearctic.

Phlegra Simon, 1876

Phlegra fasciata (Hahn, 1826)

Material examined: Helvadere 2 (N38°10'07", E34°11'54"), 1642m, 23.VII.2013 (1♂ 1♀). **World Distribution:** Palearctic.

Phlegra lineata (C.L. Koch, 1846)

Material examined: Yukarı Dikmen village 2 (N38°09'50", E34°07'33"), 1770m 19.IV.2014 (1♂), 10.V.2014 (3♂). **World Distribution:** South Europe, Turkey, Syria.

Pseudeuophrys Dahl, 1912

Pseudeuophrys lanigera (Simon, 1871)

Material examined: Helvadere 3 (38°09'68"N, 34°11'72"E), 1787m, 23.VII.2013 (2♀), 07.VI.2014 (1♀). **World Distribution:** Europe, Russia.

Salticus Latreille, 1804

Salticus scenicus (Clerck, 1757)

Material examined: Keçikalesi 2 (38°05'61"N, 34°08'29"E), 1750m, 23.VII.2013 (1♀). Akçakent 3 (38°06'86"N, 34°06'55"E), 1630m, 07.VI.2014 (1♀).

World Distribution: Holarctic.

Family Scytodidae

Scytodes Latreille, 1804

Scytodes thoracica (Latreille, 1802)

Material examined: Keçikalesi 1 (38°04'37"N, 34°08'26"E), 1534m, 23.VII.2013 (1♂), 07.VI.2014 (2♂ 1♀). Keçikalesi 2 (38°05'61"N, 34°08'29"E), 1750m, 23.VII.2013 (2♂ 2♀), 07.VI.2014 (2♀). Keçikalesi–Akçakent (38°04'51"N, 34°06'73"E), 1724m 28.VIII.2013 (1♂ 1♀). Karacaören 3 (38°07'47"N, 34°06'30"E), 1680m, 23.VII.2013 (2♂), 07.VI.2014 (1♂ 2♀). Helvadere 3 (38°09'68"N, 34°11'72"E), 1787m, 23.VII.2013 (1♂), 28.VIII.2013 (1♂), 07.VI.2014 (2♂ 2♀).

World Distribution: Holarctic, Pacific Islands.

Family Sparassidae

Micrommata Latreille, 1804

Micrommata virescens (Clerck, 1757)

Material examined: Aşağı Dikmen village (38°09'34"N, 34°05'25"E), 1410m, 19.IV.2014 (1♀), 10.V.2014 (1♀). Dikmen-Gözlükuyu (38°09'67"N, 34°07'40"E), 1587m, 10.V.2014 (1♂ 1♀), 07.VI.2014 (1♂ 1♀). **World Distribution:** Palearctic.

Family Tetragnathidae

Tetragnatha Latreille, 1804

Tetragnatha obtusa C.L. Koch, 1837

Material examined: Akçakent-Karacaören 2 (38°06'12"N, 34°05'56"E), 1513m, 23.VII.2013 (4♂ 3♀), 28.VIII.2013 (3♂ 2♀), 07.VI.2014 (2♂ 4♀).

World Distribution: Palearctic.

Family Theridiidae

Cryptachaea Archer, 1946

Cryptachaea riparia (Blackwall, 1834)

Material examined: Karakapı 3 (38°05'32"N, 34°10'87"E), 1867m, 23.VII.2013 (1♀).

World Distribution: Palearctic.

Enoplognatha Pavesi, 1880

Enoplognatha oelandica (Thorell, 1875)

Material examined: Helvadere 1 (38°11'30"N, 34°12'20"E), 1495m, 28.VIII.2013 (2♂).

World Distribution: Palearctic.

Enoplognatha thoracica (Hahn, 1833)

Material examined: Karakapı 2 (38°04'48"N, 34°10'17"E), 1604m, 23.VII.2013 (2♂ 3♀), 07.VI.2014 (1♂ 3♀). Karakapı 3 (38°05'32"N, 34°10'87"E), 1867m, 23.VII.2013 (2♂ 3♀), 07.VI.2014 (1♂ 3♀). Hasan Mountain 2 (38°09'05"N, 34°10'50"E), 1859m, 23.VII.2013 (2♂ 1♀), 07.VI.2014 (1♂ 2♀). **World Distribution:** Holarctic.

Episinus Walckenaer, in Latreille, 1809

Episinus truncatus Latreille, 1809

Material examined: Karacaören 1 (38°07'98"N, 34°04'63"E), 1300m, 23.VII.2013 (1♀). Yukarı Dikmen village 1 (38°08'38"N, 34°06'28"E), 1600m, 23.VII.2013 (1♀), 28.VIII.2013 (2♀). **World Distribution:** Palearctic.

Euryopsis Menge, 1868

Euryopsis laeta (Westring 1861)

Material examined: Gözlükuyu 3 (38°10'33"N, 34°07'14"E), 1474m, 23.VII.2013 (2♀), 28.VIII.2013 (1♀). **World Distribution:** Europe, Russia, Tunisia to Tajikistan.

Neottiura Menge, 1868

Neottiura herbigrada (Simon, 1873)

Material examined: Karakapı 4 (38°05'55"N, 34°09'86"E), 1950m, 23.VII.2013 (1♀). Akçakent-Karacaören 3 (38°07'88"N, 34°04'26"E), 1272m, 23.VII.2013 (1♀). **World Distribution:** France, Madeira to Israel, China, Korea.

Steatoda Sundevall, 1833

Steatoda albomaculata (De Geer, 1778)

Material examined: Hasan Mountain 3 (38°09'16"N, 34°09'49"E), 2050m, 23.VII.2013 (1♀), 07.VI.2014 (1♀). **World Distribution:** Cosmopolitan.

Steatoda paykulliana (Walckenaer, 1805)

Material examined: Karakapı 2 (38°04'48"N, 34°10'17"E), 1604m, 23.VII.2013 (1♀), 28.VIII.2013 (1♂). Keçikalesi 1 (38°04'37"N, 34°08'26"E), 1534m, 23.VII.2013 (1♂ 1♀), 28.VIII.2013 (2♂). Keçikalesi 2 (38°05'61"N, 34°08'29"E), 1750m, 23.VII.2013 (1♂), 28.VIII.2013 (2♂ 1♀), 01.XII.2013 (2♂ 2♀). Keçikalesi-Akçakent (38°04'51"N, 34°06'73"E), 1724m, 23.VII.2013 (2♂), 28.VIII.2013 (1♀), 01.XII.2013 (1♂ 2♀). Yukarı Dikmen village 2 (38°09'50"N, 34°07'33"E), 1770m, 23.VII.2013 (2♂ 1♀), 28.VIII.2013 (1♂ 1♀), 01.XII.2013 (1♀). Dikmen-Gözlükuyu (38°09'67"N, 34°07'40"E), 1587m, 23.VII.2013 (2♂ 1♀), 01.XII.2013 (2♀).

World Distribution: Europe, Mediterranean to Central Asia.

Steatoda triangulosa (Walckenaer, 1802)

Material examined: Helvadere-Yenipınar (38°10'76"N, 34°13'94"E), 1660m, 19.IV.2014 (1♂), 10.V.2014 (1♂). **World Distribution:** Cosmopolitan.

Family Thomisidae

Heriaeus Simon, 1875

Heriaeus graminicola (Doleschall, 1852)

Material examined: Dikmen-Gözlükuyu (38°09'67"N, 34°07'40"E), 1587m, 28.VIII.2013 (2♀). **World Distribution:** Europe to Central Asia.

Heriaeus simoni Kulczyński, 1903

Material examined: Karakapı 2 (38°04'48"N, 34°10'17"E), 1604m, 23.VII.2013 (1♂), 28.VIII.2013 (2♀). Karakapı 3 (38°05'32"N, 34°10'87"E), 1867m, 23.VII.2013 (2♀). **World Distribution:** Palearctic.

Misumena Latreille, 1804

Misumena vatia (Clerck, 1757)

Material examined: Karacaören 2 (38°08'43"N, 34°05'55"E), 1407m, 23.VII.2013 (1♀), 07.VI.2014 (2♀). **World Distribution:** Holarctic.

Synema Simon, 1864

Synema globosum (Fabricius, 1775)

Material examined: Akçakent-Karacaören 3 (38°07'88"N, 34°04'26"E), 1272m, 23.VII.2013 (1♀), 10.V.2014 (1♀), 07.VI.2014 (1♀). Karacaören 1 (38°07'98"N, 34°04'63"E), 1300m, 23.VII.2013 (1♀), 07.VI.2014 (2♀). Karacaören 2 (38°08'43"N, 34°05'55"E), 1407m, 23.VII.2013 (1♀), 07.VI.2014 (1♀). **World Distribution:** Palearctic.

Thomisus Walckenaer, 1805

Thomisus onustus Walckenaer, 1805

Material examined: Karakapı 3 (38°05'32"N, 34°10'87"E), 1867m, 23.VII.2013 (2♂ 2♀), 28.VIII.2013 (3♂ 1♀), 07.VI.2014 (3♂ 4♀). Akçakent 3 (38°06'86"N, 34°06'55"E), 1630m, 23.VII.2013 (2♂ 3♀), 28.VIII.2013 (3♂ 2♀). Hasan Mountain 2 (38°09'05"N, 34°10'50"E), 1859m, 23.VII.2013 (2♂ 2♀), 28.VIII.2013 (1♂ 1♀), 01.XII.2013 (3♂ 5♀), 19.IV.2014 (2♂ 4♀), 10.V.2014 (4♂ 3♀), 07.VI.2014 (3♂ 2♀). Yenipınar Kuzey (38°09'44"N, 34°13'83"E), 1806m, 23.VII.2013 (2♂ 1♀), 28.VIII.2013 (1♂ 2♀), 07.VI.2014 (3♂ 3♀). Küçük Hasan Mountain 1 (38°08'23"N, 34°14'15"E), 1868m, 23.VII.2013 (2♂ 4♀), 28.VIII.2013 (4♂ 2♀). **World Distribution:** Palearctic.

Xysticus C.L. Koch, 1835

Xysticus abramovi Marusik & Logunov, 1995

Material examined: Hasan Mountain 1 (38°06'08"N, 34°09'20"E), 2204m, 01.XII.2013 (1♂). Hasan Mountain 3 (38°09'16"N, 34°09'49"E), 2050m 01.XII.2013 (1♂). Küçük Hasan Mountain 2 (38°08'13"N, 34°14'49"E), 2089m, 01.XII.2013 (1♂). Hasan Mountain 4 (38°09'88"N, 34°11'42"E), 2138m 01.XII.2013 (1♂). **World Distribution:** Turkey, Tajikistan.

Xysticus caperatus Simon, 1875

Material examined: Karakapı 1 (38°03'82"N, 34°09'53"E), 1450m, 23.VII.2013 (1♂ 2♀), 07.VI.2014 (2♂ 1♀). Karakapı 2 (38°04'48"N, 34°10'17"E), 1604m, 23.VII.2013

(1♂ 2♀). Keçikalesi 1 (38°04'37"N, 34°08'26"E), 1534m, 23.VII.2013 (1♀), 07.VI.2014 (1♀). Keçikalesi 2 (38°05'61"N, 34°08'29"E), 1750m, 23.VII.2013 (2♀). Akçakent 1 (38°05'37"N, 34°05'72"E), 1485m, 23.VII.2013 (1♂ 2♀), 28.VIII.2013 (1♀). Akçakent-Karacaören 2 (38°06'12"N, 34°05'56"E), 1513m, 23.VII.2013 (1♂ 1♀), 28.VIII.2013 (2♂ 1♀). Akçakent-Karacaören 3 (38°07'88"N, 34°04'26"E), 1272m, 23.VII.2013 (2♂ 1♀), 28.VIII.2013 (1♀), 07.VI.2014 (2♀). Karacaören 1 (38°07'98"N, 34°04'63"E), 1300m, 23.VII.2013 (1♂ 2♀), 10.V.2014 (1♀), 07.VI.2014 (1♂ 1♀).

World Distribution: Mediterranean, Russia.

Xysticus cor Canestrini, 1873

Material examined: Karakapı 2 (38°04'48"N, 34°10'17"E), 1604m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀). Keçikalesi 2 (38°05'61"N, 34°08'29"E), 1750m, 23.VII.2013 (2♀), 28.VIII.2013 (1♀). Akçakent 2 (38°05'10"N, 34°06'34"E), 1550m, 23.VII.2013 (1♀).

World Distribution: Southern Europe, Azores, Iran.

Xysticus edax (O.P.-Cambridge, 1872)

Material examined: Akçakent-Karacaören 3 (38°07'88"N, 34°04'26"E), 1272m, 07.VI.2014 (1♀). **World Distribution:** Turkey, Israel.

Xysticus gallicus Simon, 1875

Material examined: Hasan Mountain 1 (38°06'08"N, 34°09'20"E), 2204m, 01.XII.2013 (1♀). **World Distribution:** Palaearctic.

Xysticus kochi Thorell, 1872

Material examined: Karakapı 2 (38°04'48"N, 34°10'17"E), 1604m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀). Karakapı 3 (38°05'32"N, 34°10'87"E), 1867m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀). Hasan Mountain 1 (38°06'08"N, 34°09'20"E), 2204m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀). Karakapı 4 (38°05'55"N, 34°09'86"E), 1950m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀). Küçük Hasan Mountain 2 (38°08'13"N, 34°14'49"E), 2089m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀).

World Distribution: Europe, Mediterranean to Central Asia.

Xysticus laetus Thorell, 1875

Material examined: Keçikalesi-Akçakent (38°04'51"N, 34°06'73"E), 1724m, 23.VII.2013 (1♀). Akçakent 1 (38°05'37"N, 34°05'72"E), 1485m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀). **World Distribution:** Italy to Central Asia.

Xysticus ninnii Thorell, 1872

Material examined: Karakapı 2 (38°04'48"N, 34°10'17"E), 1604m, 23.VII.2013 (2♂ 2♀). Karakapı 3 (38°05'32"N, 34°10'87"E), 1867m, 23.VII.2013 (3♂ 2♀). Hasan Mountain 1 (38°06'08"N, 34°09'20"E), 2204m, 23.VII.2013 (1♂ 2♀). Karakapı 4 (38°05'55"N, 34°09'86"E), 1950m, 23.VII.2013 (2♂ 2♀). Hasan Mountain 2 (38°09'05"N, 34°10'50"E), 1859m, 23.VII.2013 (3♂). **World Distribution:** Palaearctic.

Xysticus pseudorectilineus (Wunderlich, 1995)

Material examined: Karakapı 2 (38°04'48"N, 34°10'17"E), 1604m, 23.VII.2013 (1♀), 28.VIII.2013 (2♀), 01.XII.2013 (1♂, 2♀), 07.VI.2014 (1♀). Karakapı 3 (38°05'32"N, 34°10'87"E), 1867m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀), 01.XII.2013 (1♀), 07.VI.2014 (1♂ 2♀). Hasan Mountain 1 (38°06'08"N, 34°09'20"E), 2204m, 23.VII.2013 (2♂ 2♀), 28.VIII.2013 (1♀), 01.XII.2013 (2♀), 07.VI.2014 (1♂ 1♀). Karakapı 4

(38°05'55"N, 34°09'86"E), 1950m, 23.VII.2013 (1♂), 28.VIII.2013 (2♂), 01.XII.2013 (1♀), 07.VI.2014 (1♂ 1♀). Keçikalesi 1 (38°04'37"N, 34°08'26"E), 1534m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀), 01.XII.2013 (1♂), 07.VI.2014 (1♀). Keçikalesi 2 (38°05'61"N, 34°08'29"E), 1750m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀), 01.XII.2013 (1♂ 1♀), 07.VI.2014 (1♂ 1♀). Keçikalesi 3 (38°05'42"N, 34°08'49"E), 1950m, 23.VII.2013 (1♀), 28.VIII.2013 (1♂), 01.XII.2014 (1♂ 1♀), 07.VI.2014 (1♀). Keçikalesi-Akçakent (38°04'51"N, 34°06'73"E), 1724m, 23.VII.2013 (1♂ 1♀), 28.VIII.2013 (1♀), 07.VI.2014 (1♀). Akçakent 1 (38°05'37"N, 34°05'72"E), 1485m, 23.VII.2013 (1♀), 28.VIII.2013 (1♂), 01.XII.2013 (1♀), 07.VI.2014 (1♂ 1♀). Akçakent 2 (38°05'10"N, 34°06'34"E), 1550m, 23.VII.2013 (1♀), 28.VIII.2013 (1♂), 01.XII.2013 (1♀), 07.VI.2014 (1♀). Akçakent 3 (38°06'86"N, 34°06'55"E), 1630m, 23.VII.2013 (1♂ 1♀), 28.VIII.2013 (1♂), 01.XII.2013 (1♂), 07.VI.2014 (1♀). Karacaören 3 (38°07'47"N, 34°06'30"E), 1680m, 23.VII.2013 (1♂ 1♀), 28.VIII.2013 (1♂), 01.XII.2013 (1♂), 07.VI.2014 (1♂). Gözlükuyu 2 (38°10'86"N, 34°07'39"E), 1610m, 23.VII.2013 (1♂ 1♀), 28.VIII.2013 (1♀), 01.XII.2013 (1♀), 07.VI.2014 (1♀). Gözlükuyu 3 (38°10'33"N, 34°07'14"E), 1474m, 23.VII.2013 (1♂ 1♀), 28.VIII.2013 (1♀), 01.XII.2013 (1♀), 07.VI.2014 (1♂ 1♀). Gözlükuyu-Karkın 1 (38°11'36"N, 34°08'43"E), 1360m, 23.VII.2013 (1♀), 28.VIII.2013 (1♂ 1♀), 01.XII.2013 (1♀), 07.VI.2014 (1♂). Helvadere 2 (38°10'07"N, 34°11'54"E), 1642m, 23.VII.2013 (1♂), 28.VIII.2013 (1♀), 01.XII.2013 (1♀), 07.VI.2014 (1♂ 1♀). **World Distribution:** Turkey, Greece.

Xysticus striatipes L. Koch, 1870

Material examined: Karakapı 2 (38°04'48"N, 34°10'17"E), 1604m, 01.XII.2013 (1♀). Keçikalesi 1 (38°04'37"N, 34°08'26"E), 1534m, 23.VII.2013 (1♀), 28.VIII.2013 (1♀), 01.XII.2013 (1♀). Keçikalesi 2 (38°05'61"N, 34°08'29"E), 1750 m, 28.VIII.2013 (1♀), 01.XII.2013 (1♀). Helvadere-Yenipınar (38°10'76"N, 34°13'94"E), 1660m, 01.XII.2013 (1♀). Yenipınar (38°10'77"N, 34°14'04"E), 1736m, 01.XII.2013 (1♀).

World Distribution: Palearctic.

Xysticus tenuiapicalis Demir, 2012

Material examined: 2♀♀ (NUAM), Niğde province, Maden village, (37°20'N, 34°54'E), 18.04.2002, 1♀ (NUAM), Meydan plateau, (37°35'N, 34°33'E), 18.04.2002, 1♂ 2♀♀ (NUAM), Aksaray province, Helvadere village, (38°10'07"N, 34°11'54"E), 1642m, 23.04.2014, 2♂ 3♀ (NUAM), Yukarı Dikmen village, (38°08'38"N, 34°06'28"E), 1600m, 08.05.2014. **Records in Turkey:** Aksaray, Ankara, Nevşehir (Demir, 2012).

World Distribution: Turkey (Endemic).

Xysticus thessalicus Simon, 1916

Material examined: Yenipınar Kuzey (38°09'44"N, 34°13'83"E), 1806m, 23.VII.2013 (1♂ 1♀). **World Distribution:** Balkans, Turkey, Greece, Israel.

Xysticus tristrami (O.P.-Cambridge, 1872)

Material examined: Akçakent 3 (38°06'86"N, 34°06'55"E), 1630m, 23.VII.2013 (1♂ 2♀), 07.VI.2014 (1♂ 1♀). Akçakent-Karacaören 3 (38°07'88"N, 34°04'26"E), 1272m, 23.VII.2013 (1♀), 07.VI.2014 (1♀). Akçakent 3 (38°06'86"N, 34°06'55"E), 1630m, 23.VII.2013 (1♂ 2♀), 07.VI.2014 (2♀). Hasan Mountain 3 (38°09'16"N, 34°09'49"E), 2050m, 01.XII.2013 (1♀). Küçük Hasan Mountain 2 (38°08'13"N, 34°14'49"E), 2089m, 01.XII.2013 (1♀). **World Distribution:** Crete, Saudi Arabia to Central Asia.

Family Titanoecidae

Nurscia Simon, 1874

Nurscia albomaculata (Lucas, 1846)

Material examined: Karakapı 1 (38°03'82"N, 34°09'53"E), 1450m, 23.VII.2013 (3♀), 28.VIII.2013 (2♀). Karakapı 2 (38°04'48"N, 34°10'17"E), 1604m, 23.VII.2013 (1♂ 2♀), 28.VIII.2013 (1♂). Karacaören 2 (38°08'43"N, 34°05'55"E), 1407m, 23.VII.2013 (2♂), 28.VIII.2013 (2♀). Karacaören 3 (38°07'47"N, 34°06'30"E), 1680m, 23.VII.2013 (1♂ 1♀), 28.VIII.2013 (2♂). Aşağı Dikmen village (38°09'34"N, 34°05'25"E), 1410m, 23.VII.2013 (3♀), 28.VIII.2013 (2♀), Yukarı Dikmen village 1 (38°08'38"N, 34°06'28"E), 1600m, 23.VII.2013 (4♀), 28.VIII.2013 (1♂ 1♀). Yukarı Dikmen village 2 (38°09'50"N, 34°07'33"E), 1770m, 23.VII.2013 (1♂), 28.VIII.2013 (5♀). Dikmen-Gözlükuyu (38°09'67"N, 34°07'40"E), 1587m, 23.VII.2013 (5♀), 28.VIII.2013 (1♀).

World Distribution: Europe, Egypt to Central Asia.

Titanoeca Thorell, 1870

Titanoeca quadriguttata (Hahn, 1833)

Material examined: Keçikalesi-Akçakent (38°04'51"N, 34°06'73"E), 1724m, 23.VII.2013 (1♂ 2♀), 28.VIII.2013 (1♂ 1♀). Helvadere 3 (38°09'68"N, 34°11'72"E), 1787m, 28.VIII.2013 (3♀). **World Distribution:** Palearctic.

Family Zodariidae

Zodarion Walckenaer, 1826

Zodarion thoni Nosek, 1905

Material examined: Akçakent-Karacaören 3 (38°07'88"N, 34°04'26"E), 1272m, 23.VII.2013 (1♂ 3♀), 28.VIII.2013 (2♂ 1♀). Dikmen-Gözlükuyu (38°09'67"N, 34°07'40"E), 1587m, 23.VII.2013 (1♀), 28.VIII.2013 (1♂ 3♀). Yenipınar (38°10'77"N, 34°14'04"E), 1736m, 23.VII.2013 (2♂ 1♀).

World Distribution: Eastern Europe to Azerbaijan.

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***Arabelia* Bosselaers, 2009 and *Arabelia pheidoleicomis*
Bosselaers, 2009 (Araneae: Liocranidae) are new records for
the Turkish Spider Fauna**

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Abstract

The liocranid spider species, *Arabelia pheidoleicomis* Bosselaers, 2009 is recorded for the first time from Turkey. Its general habitus and genitalia are illustrated. Description and collecting data of this species are also given. Also, genus *Arabelia* Bosselaers, 2009 is recorded for the first time from Turkey.

Keywords: Araneae, Liocranidae, New Record, Turkey.

Introduction

The family Liocranidae Simon, 1897, formerly subfamily Liocraninae within the family Clubionidae (Simon, 1897), was raised to family rank by Lehtinen (1967) (Bosselaers, 2009). The members of this family are small to medium-sized araneomorph spiders, generally known as ground dwellers occupying tree litter on the forest floor. The myrmecomorphy is showed in many species of this family. The world liocranid fauna consists of 270 known species in 31 genera (World Spider Catalog, 2016); the family is represented in Turkey by 12 species and 7 genera (Bayram *et al.*, 2016). The aim of this paper is to present the liocranid spider *Arabelia pheidoleicomis* Bosselaers, 2009 as a new record for the Turkish araneofauna in addition to the first record of genus *Arabelia* Bosselaers, 2009 from Turkey too.

Material and Methods

In this study, two female specimens were obtained by hand collecting from under debris cluster in the surroundings of Salt Lake and another female specimen was collected from Bolvadin district in Afyon Province in central part of Turkey (Fig. 1).

Examined specimens were preserved in 70% ethanol and deposited in the Arachnology Museum of Niğde University (NUAM). The identification was made by means of a SZX9 Olympus stereomicroscope. The works of Bosselaers (2009) and Wunderlich (2012) were consulted for the identification of this species.

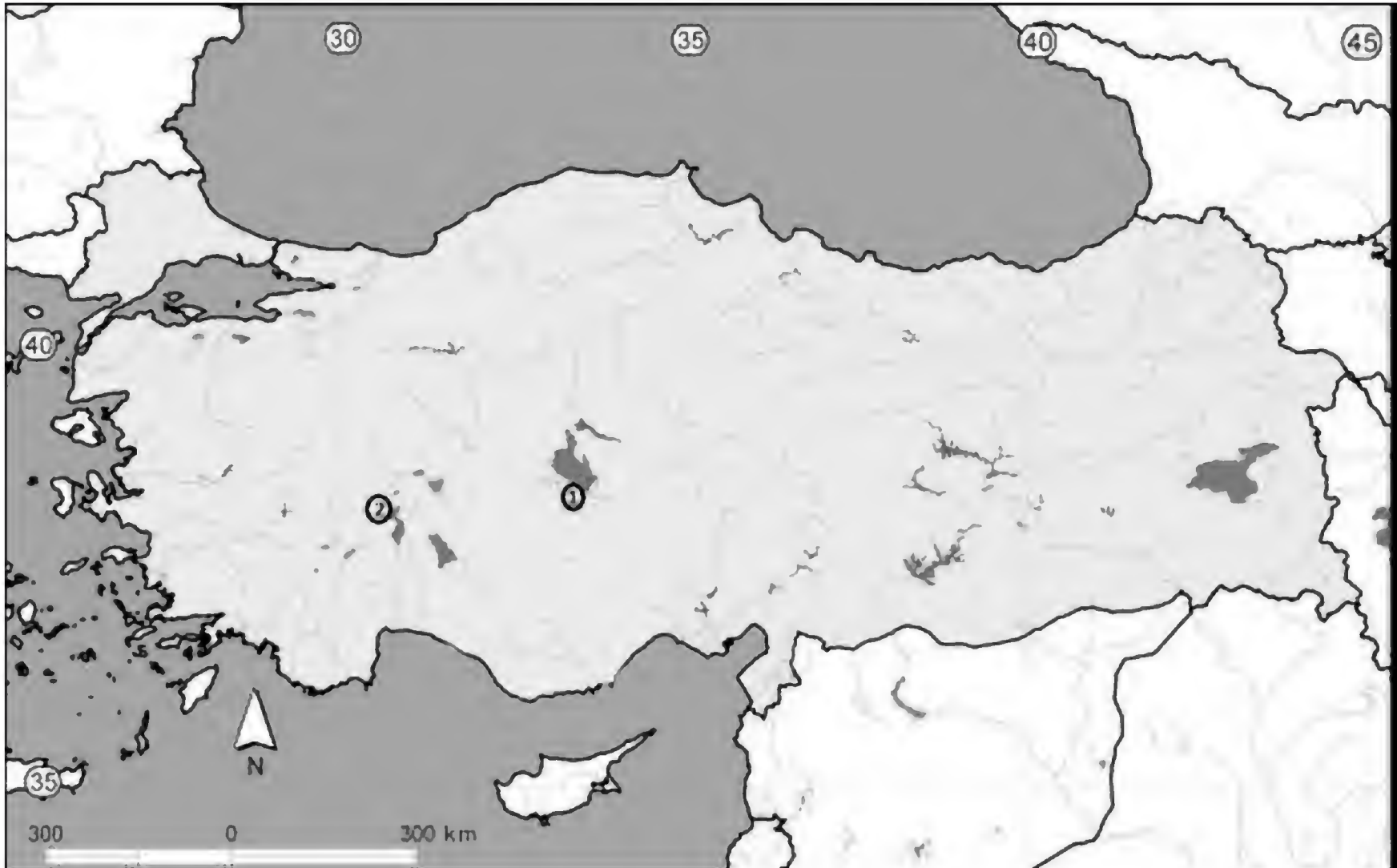


Fig. 1. Collected sites of *Arabelia pheidoleicomes* Bosselaers, 2009 in Turkey. 1. Aksaray Province (Salt lake), 2. Bolvadin, Afyon Province.



Fig. 2. *Arabelia pheidoleicomes* Bosselaers, 2009 ♀. A. Habitus, dorsal view. B. Epigyne.

Results

Arabelia pheidoleicomes Bosselaers, 2009 (Fig. 2)

Material examined: 2♀♀, Aksaray Province, Eskil District, surrounding of Salt Lake, under debris cluster, (38°25'15.29"N, 33°26'47.9"E) in May. 1♀, Afyon Province, Bolvadin District, Kemerkaya, under stone, (38°53'18"N 31°04'46"E) in May. All specimens were deposited in Niğde University Arachnology Museum.

Identification and description: Bosselaers (2009) and Wunderlich (2012).

World distribution. Greece (World Spider Catalog, 2016) and Turkey (this study).

Remarks. Two adult females are found in May from surrounding of Salt Lake in Central Anatolia. Both specimens were collected under the debris cluster in steppe ecosystems. Another female was collected under stone from step area in Bolvadin. Bosselaers (2009) said that this species is clearly myrmecophylic. Although collecting sites of this species were suitable places for ants, we did not observe this symbiosis.

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Spiders of Sebkhet El Melah (Northern Sahara, Algeria): Review and new records

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Abstract

The current scientific understanding of spider communities living in Algerian Sahara habitats is significantly poor and remains not updated. Thus, our knowledge of spider diversity in this area remains highly ill-known with regarding patterns of environmental factors under the context of hot-arid climate, particularly in wetlands ecosystems. This study was carried out in Sebkhet El Melah located in El Menia (Ghardaïa, Algeria) during April and May, 2015. Spiders were randomly sampled in the surroundings of the site using direct collecting methods. The entire sample consists of a set of 74 adult individuals, which were taxonomically classified into 13 spider species that belong to 13 genera and 9 families. Under the family Dictynidae, three species were recorded in three genera, followed by Gnaphosidae and Lycosidae with two species for each family. This study aims to establish the first exhaustive taxonomic inventory of spider fauna of the surveyed area.

Keywords: Spiders, El Menia, Sebkhet El Melah, Ghardaïa, Biodiversity, Sahara, Algeria.

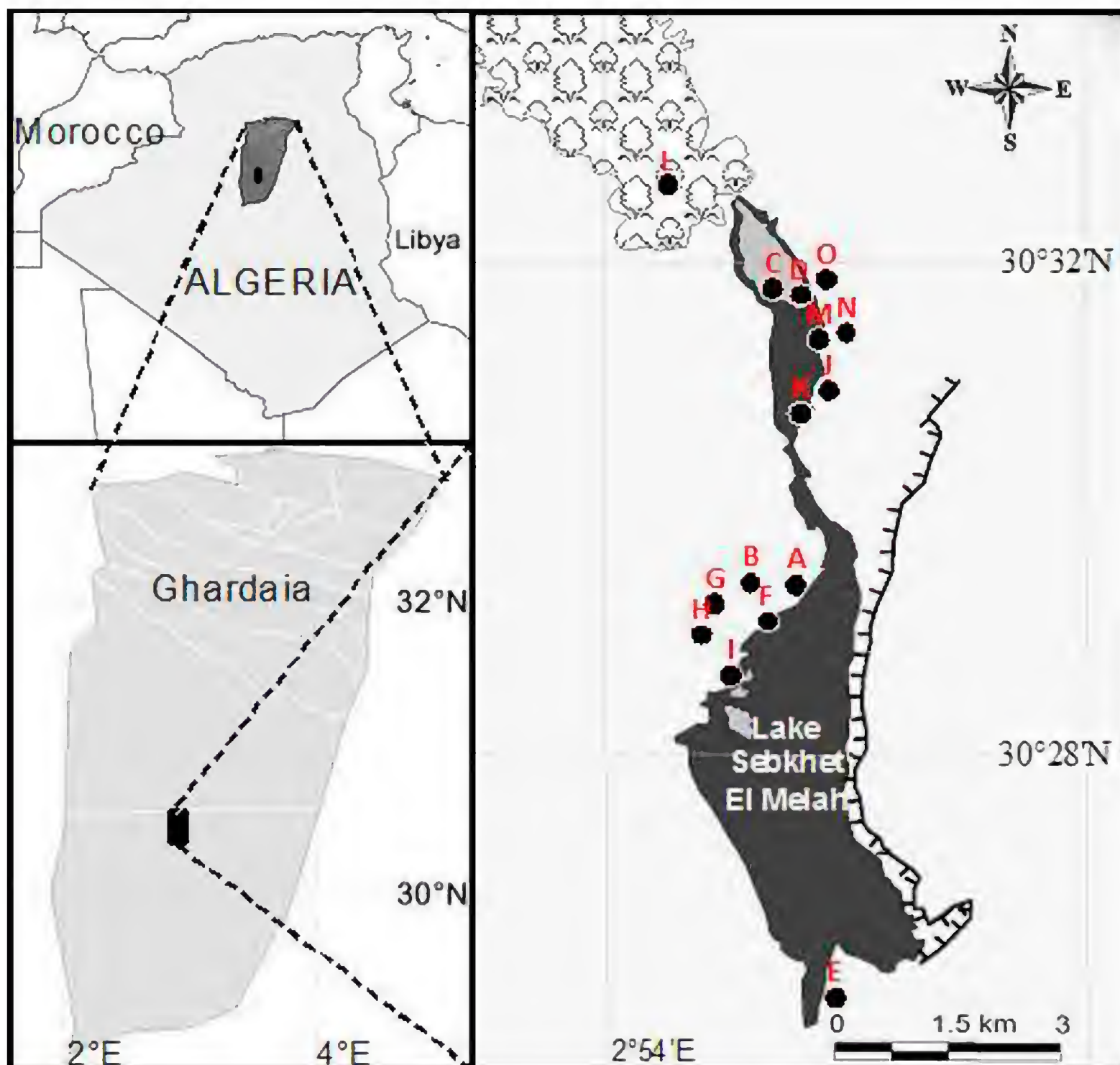
Introduction

Spiders are found almost everywhere on earth, from Arctic islands to dry desert regions (Foelix, 2011). They are potential predators, with one exception (Meehan *et al.*, 2009), and play a very important role in the ecological balance. They are very diverse, with more than 45,900 known and described species today (World Spider Catalog, 2016).

Algeria is the largest country in Africa, by its position stretching from the Sahara desert to the Mediterranean sea, it holds various ecosystems and miscellaneous distinct gradual climates, from sub-tropical in the coastal northeast part of the country to semi-arid in the Hauts Plateaux and an arid climate across the Sahara (Samraoui & Samraoui, 2008).

The spider fauna of Algeria is still poorly known and not up to date. The few recent works in this context are mainly concentrated in only some parts of the country located essentially in semi-arid and coastal lands, like the works of: Bosmans & Beladjal (1991) on Dysderidae and Bosmans & Abrous (1992) on Linyphiidae. However the spiders of arid lands which occupy 80% of the country are almost unknown.

El Menia (Ex El Golea) is situated in the centre of Algeria, crossed by The Oued Seggeur and bordered to the west by the dunes of the Grand Erg Occidental, it is noted for its oasis and plentiful water, which led to the appearance of the lake of Sebket El Melah. Thanks to its variety of habitats, which cater to different species, it hosts different reptiles, amphibians, fish, crustacean and bird species (RAMSAR, 2011). In this study, which is considered as first and preliminary, we present a spider list of a survey conducted in the area.



Map 1. Study area showing the upper and lower basins of lake Sebket El Melah. Rocky hills extend at right and the palm grove at north; the sampled localities are plotted by circles (A-O).

Material and Methods

Study area

Sebkhet El Melah wetland is located at 870 km to the south of Algiers, in the centre of the Algerian Sahara (30°25'-30°32'N and 02°54'-02°56'E) at an altitude ranging from 330 to 397 m, with a total area of 72 000 ha (Map. 1). It is classified in the Ramsar list in 2004 (RAMSAR, 2011). The shallow lake, or sebkha, is bordered on one side by an open field oriented towards the El-Golea oasis; on the other side it is enclosed by rocky hills and sand dunes (Hacene *et al.*, 2004); the lake is composed of an upper fresh basin connected to a lower salt one, both are mainly supplied by drainage water, rain and sewage from the city of the same name (Bouzid *et al.*, 2009) (Fig. 1).



Fig 1. Sebkhet El Melah: A. Upper basin, B. Lower basin.

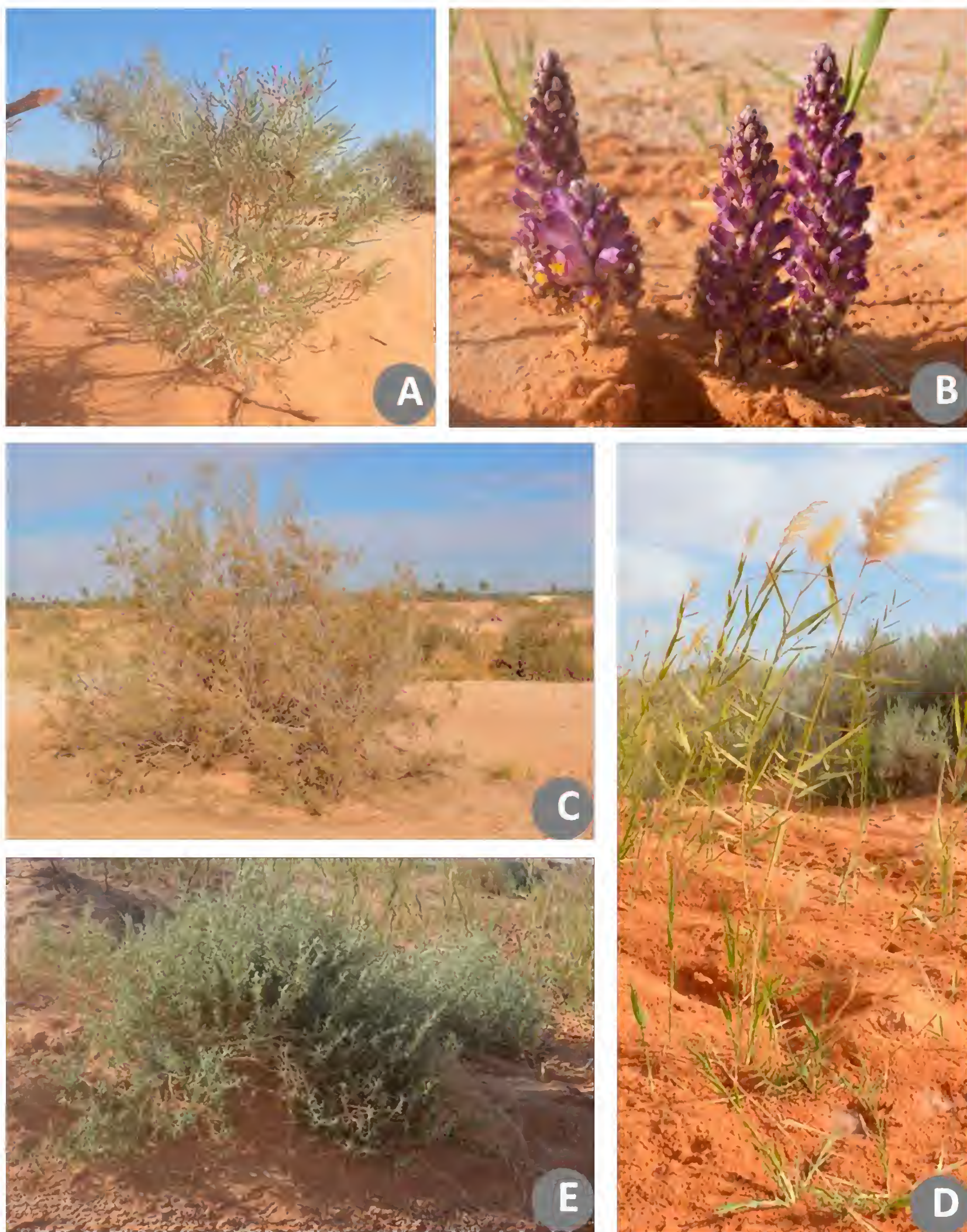


Fig. 2. Some identified plants in the site: A. *Limoniastrum guyonianum*, B. *Orobanche cernua*, C. *Tamarix gallica*, D. *Phragmites australis*, E. *Zygophyllum album*.

The study area is characterized by an arid Saharan climate with a mild winter, the annual recorded precipitation being 47.3 mm. Annual mean temperature is 22.5°C, the dominant winds come from the south-west and induce the movement of sand. Soil is marly, limestone for the upper basin and marly hyaline and sandy for the lower, with salt crust covering the ground surface. The vegetation cover is diversified and composed elementary from 13 species: *Oudneya africana* R.Br. (Brassicaceae), *Juncus maritimus* Lam. (Juncaceae), *Phoenix dactylifera* L. (Palmae or Arecaceae), *Limoniastrum guyonianum* Boiss. (Plumbaginaceae), *Cynodon dactylon* (L.) Pers. and *Phragmites*

australis (Cav.) Trin. ex Steud. (Poaceae), *Tamarix gallica* L. (Tamaricaceae), *Typha angustifolia* L. (Typhaceae), *Zygophyllum album* L. (Zygophyllaceae), *Orobanche cernua* Loefl. (Orobanchaceae), *Calligonum comosum* L'Herit (Polygonaceae), *Suaeda fruticosa* (L.) Forssk. (Amaranthaceae), *Pergularia tomentosa* L. (Apocynaceae) (Fig. 2). The area is recognized also as an important bird area (IBA) and holds large flocks of several migrant birds of which 12 species were recorded (Samraoui & Samraoui, 2008).

Sampling methods

This study was carried out between April and May, 2015. Random collecting in the surroundings of the two basins was undertaken in 15 localities, by direct collecting during different periods of the day, by prospecting locations suspected to house spiders: under rocks, under soil crust, on the ground, and on low shrubs and trees. Spiders are photographed in their natural habitats, then captured and conserved in tubes containing 70% ethanol. Identification was made at the University of Ghent using a binocular microscope (Nikon SMZ 1270). Since the sampling was taken in a short period, it may not reflect the true diversity of the area, but it gives a preliminary list of the spiders of the wetland.

Results and Discussion

A set of 74 adult spiders (80.4 % of the total number of sampled spiders) was recorded, representing 13 species belonging to 13 genera and 9 families. The high species diversity was noticed among the family Dictynidae (3 species) followed by Gnaphosidae (2 species) and Lycosidae (2 species); each of the other families were represented by only one species. The most abundant species was *Devade indistincta* (O. Pickard-Cambridge, 1872) with 32 individuals (43.24 % of total abundance) followed by *Benoitia lepida* (O. Pickard-Cambridge, 1876) with 10 individuals (13.51 %) and *Larinioides folium* (Schrank, 1803) with 7 individuals (9.46 %) (Tab.1) (Fig. 3).

Table 1. List of the spider species collected in the two basins of Sebkhet El Melah.

Family	Species	n	RA (%)	Sex	Habitat	Water quality	Guild
Agelenidae	<i>Benoitia lepida</i>	10	13,51	2♂, 8♀	Web on <i>Z. album</i>	Salt	Sheet web
Araneidae	<i>Larinioides folium</i>	7	9,46	3♂, 4♀	Web on <i>P. communis</i>	Salt/fresh	Orb web
Dictynidae	<i>Devade indistincta</i>	32	43,24	8♂, 24♀	Sand/ Soil crust	Salt/fresh	-
	<i>Dictyna</i> sp.	1	1,35	♀	-	Fresh	Space web
	<i>Brigittea civica</i>	2	2,70	♀	On <i>S. lineatus</i> Web	Fresh	
Eresidae	<i>Stegodyphus lineatus</i>	6	8,11	♀	Web On <i>T. gallica</i>	Fresh	Sheet web
Gnaphosidae	<i>Pterotricha chazaliae</i>	2	2,70	♀	Under rock	Fresh	Ground hunters
	Gnaphosidae species	1	1,35	♀	Under rock	Fresh	
Hersiliidae	<i>Hersiliola macullulata</i>	3	4,05	1♂, 2♀	Web under rock	Fresh	Sensing web
Lycosidae	<i>Wadicosa fidelis</i>	4	5,41	1♂, 3♀	On the ground	Salt	Ground hunters
	Lycosidae species	2	2,70	♀	On the ground	Fresh	
Philodromidae	<i>Thanatus vulgaris</i>	3	4,05	♀	On the ground	Salt/fresh	Other hunters
Salticidae	<i>Aelurillus</i> cf. <i>luctuosus</i>	1	1,35	♀	On the ground	Fresh	Other hunters

n = number of individuals, RA = relative abundance.

From the collected fauna, five species were presented by males and females: *Benoitia lepida*, *Larinioides folium*, *Devade indistincta*, *Hersiliola macullulata* (Dufour, 1831) and *Wadicosa fidelis* (O. Pickard-Cambridge, 1872); the other species were presented only by females.



Fig. 3. Spiders recorded in Sebkhet El Melah: A. *Thanatus vulgaris*, B. *Stegodyphus lineatus*, C. *Benoitia lepida*, D. *Larinioides folium*.

Three species among the list are known only by genus: *Dictyna* sp., Gnaphosidae species, Lycosidae species and may be new to science.

In the literature, only three species have been listed for Sebkhet El Melah: *Pterotricha insolita* Dalmat, 1921 by Dalmat (1921), *Setaphis fuscipes* (Simon, 1885) by Platnick & Murphy (1996) and *Odontodrassus mundulus* (O. Pickard-Cambridge, 1872) by Fage (1929), published under the name *Poecilochroa monodi*. In addition to this list, all the 13 collected species in this study are considered to be new records for the area considering that Ras el Erg at 90 km to the south of El Golea is a location that is not belonging to the same ecosystem of El Golea, where Foord & Dippenaar-Schoeman (2005) have found *Hersiliola macullulata*.

In comparison, Alioua *et al.* (2012) cited 18 families in the palm grove ecosystem of Ouargla, 280 km to the north-east. Seven of them exist also in Sebkhet El Melah, Bouseksou & Kherbouche-Abrous (2015) in a wheat ecosystem in Algiers cited 18 families; five of them are present in the study area.

The type of the vegetation and the quality of water are criteria that suppose to influence the distribution of species. Following the global pattern of guild composition (Cardoso *et al.*, 2011), the web builders spiders (Orb, space and sheet) are associated to different plants in the site and use them as a support for their webs: *Stegodyphus lineatus* (Latreille, 1817) to *Tamarix gallica*, *Lariniodes folium* to *Tamarix gallica* or to *Phragmites australis* spikes and *Benoitia lepida* to *Zygophyllum album*. The sensing web builder *Hersiliola macullulata* is always captured under rocks. The ground hunters: *Pterotricha chazaliae* (Simon, 1895), Gnaphosidae sp., *Wadicosa fidelis*, Lycosidae sp. and the other hunters: *Thanatus vulgaris* Simon, 1870 and *Aelurillus* cf. *luctuosus* (Lucas, 1846) are associated to the ground. *Brigittea civica* (Lucas, 1850) is noticed for building its web on the web of *Stegodyphus lineatus*. The low diversity in the site might be explained by the arid climate manifested in high temperatures and wind storms that cause water dryness, also by the short period of sampling and the used method that leads to a distinct species spectrum.

Acknowledgments

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New records to the spider fauna of Turkey (Araneae: Eutichuridae, Gnaphosidae)

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Abstract

Four spider species of families Eutichuridae: *Cheiracanthium montanum* L. Koch, 1877 and Gnaphosidae: *Scotophaeus quadripunctatus* (Linnaeus, 1758), *Zelotes erebeus* (Thorell, 1871), and *Z. exiguus* (Müller & Schenkel, 1895) are reported for the first time from Turkey. Digital photographs of genitalia of the newly recorded species are presented together with their zoogeographical distribution.

Keywords: Araneae, New records, *Cheiracanthium montanum*, *Scotophaeus quadripunctatus*, *Zelotes erebeus*, *Zelotes exiguus*, Turkey.

Introduction

The spiders are known as venomous arthropods, but they also act as predators or biological agents. Systematic, ecological and behaviour features of spiders were studied since eighteenth century. In the world, more than 45,900 species are known (World Spider Catalog, 2016). Faunal studies on the diversity of Turkish spider fauna have not been completed and with each passing day new spider species and new records are added.

In this study, one species belonging to family Eutichuridae and three species belonging to family Gnaphosidae were determined as new records. Genus *Cheiracanthium* was transferred from family Clubionidae Wagner, 1887 to family Miturgidae Simon, 1886 by Ramírez *et al.* (1997) and recently transferred from family Miturgidae to family Eutichuridae Lehtinen, 1967 by Ramírez (2014). There are 7 *Cheiracanthium* species recorded from Turkey until now (Bayram *et al.*, 2016).

Gnaphosid spiders are generally characterized by their spinnerets: "anterior spinnerets are cylindrical, longer and more heavily sclerotized than the posterior, and

widely separated" (Kaston, 1978). This family contains many species in Turkey, 30 genera and 133 species from 330 genera and 1017 species [about 13%]; there are 2 *Scotophaeus* and 27 *Zelotes* species recorded from Turkey until now (Bayram *et al.*, 2016).

In this work, four species from two families, i.e. Eutichuridae and Gnaphosidae, are identified as new records to the Turkish fauna. Reviewing the literature, it is evident that the spider fauna of Turkey is not yet completely studied and only 1017 species belonging to 53 families are recorded (Bayram *et al.*, 2016).

Material and Methods

Specimens of families Eutichuridae and Gnaphosidae were collected from the Turgutlu district of Manisa province in western Turkey during May-October 2003. They were caught by pitfall traps of 200 ml cups partly buried in the soil in such a way as to position the lip of the trap at ground level. Traps were half filled with a mixture of ethylene glycol and water at 1:1 ratio (Anlaş *et al.*, 2010). A total of five pitfall traps were placed in biotopes that have different altitudes described as Chestnut biotope (*Castanea sativa* Miller, 620m), Pines forest (*Pinus brutia* Tenore, *Pinus nigra* Arnold, *Cistus laurifolius* L. and *Polypodium* sp., 930m), Oak forest (*Quercus ithaburensis* Decaisne subsp. *macrolepis* (Kotschy), *Quercus infectoria* Olivier, *Cistus creticus* L., *Pyrus amygdaliformis* Villars, *Astragalus* sp., 980m), and Fire-influenced biotopes (*Rosa canina* L., *Cistus laurifolius* L., *Thymus longicaulis* and there are burnt wood pieces and trees, 960m). Then, collected material were deposited in the University of Gaziantep, Zoology Museum (GAUZM, Department of Biology, Gaziantep, Turkey). All specimens were identified according to Nentwig *et al.* (2016).

Results

Family Eutichuridae Lehtinen, 1967

Cheiracanthium montanum L. Koch, 1877 (Figs. 1-2)

Material examined: 1♂, Manisa province, Turgutlu district, Dağmarmara area, 38°22'44"N, 27°52'12"E, 930 m elevation, pine forest, 03.06.2003.

World distribution: Palaearctic (World Spider Catalog, 2015).

Family Gnaphosidae Pocock, 1898

Scotophaeus quadripunctatus (Linnaeus, 1758) (Figs. 3-4)

Material examined: 2♀♀, Manisa province, Turgutlu district, Dağmarmara area, 38°23'37"N, 27°49'09"E, 620 m elevation, chestnuts forest, 13.08.2003.

World distribution: Europe, Russia (World Spider Catalog, 2015)

Zelotes erebeus (Thorell, 1871) (Figs. 5-6)

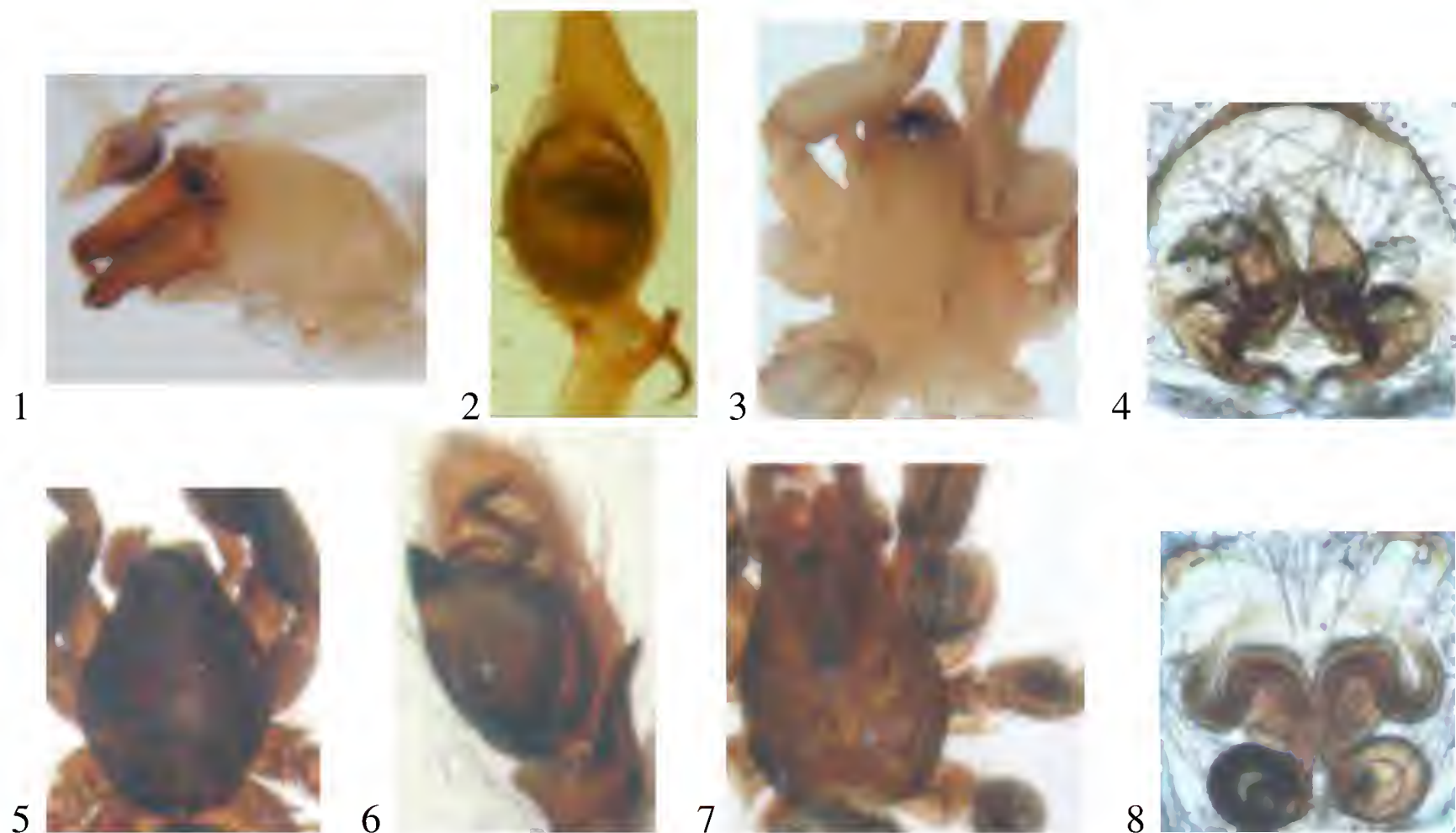
Material examined: 2♂♂, Manisa province, Turgutlu district, Dağmarmara area, 38°22'14"N, 27°50'39"E, 980 m elevation, oak forest, 13.08.2003.

World distribution: Europe to Georgia (World Spider Catalog, 2015).

Zelotes exiguus (Müller & Schenkel, 1895) (Figs. 7-8)

Material examined: 1♀, Manisa province, Turgutlu district, Dağmarmara area, 38°23'37"N, 27°49'09"E, 620 m elevation, chestnuts forest, 18.05.2003.

World distribution: Palaearctic (World Spider Catalog, 2015).



Figs. 1-8. 1-2. *Cheiracanthium montanum* L. Koch, 1877 ♂. 1. Prosoma, dorsolateral view, 2. Palpal organ, ventral view. 3-4. *Scotophaeus quadripunctatus* (Linnaeus, 1758) ♀. 3. Prosoma, dorsal view, 4. Vulvae, dorsal view. 5-6. *Zelotes erebeus* (Thorell, 1871) ♂. 5. Prosoma, dorsal view, 6. Palpal organ, retrolateral view. 7-8. *Zelotes exiguus* (Müller & Schenkel, 1895) ♀. 7. Prosoma, dorsal view, 8. Vulvae, dorsal view.

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***Stalagtia hercegovinensis* (Nosek, 1905), a new record from Turkey (Araneae: Dysderidae)**

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Abstract

This paper reports one dysderid species as a new record for the Turkish araneo-fauna. The characteristic features and photographs of *Stalagtia hercegovinensis* (Nosek, 1905) are presented. The total number of dysderid species recorded from Turkey will be now 58 species.

Keywords: Spiders, Dysderidae, *Stalagtia hercegovinensis*, New record, Turkey.

Introduction

Family Dysderidae is represented by 24 genera and 540 species in the world (World Spider catalogue, 2016). Within Turkish spider fauna, with a total of 330 genera and 1017 species, it is represented by 55 species of 7 genera, in addition to more 2 species recently recorded from Turkey by Varol & Akpınar (2016). One species have hitherto been known in Turkey from genus *Stalagtia* Kratochvíl, 1970 (Bayram *et al.*, 2016). This species is *Stalagtia thaleriana* Chatzaki & Arnedo, 2006. In this paper, one dysderid species is added to the spider fauna of Turkey. This species is *Stalagtia hercegovinensis* (Nosek, 1905) to increase the dysderids of Turkey to 58 species.

Material and Methods

Two male specimens were examined in this study. These specimens were collected during the day by hand aspirator below Pine trees. The specimens were preserved in 70% ethanol. Pictures were taken using a Leica S8APO microscope by means of a Leica DC 160 camera. Identification of the species depended on the works of Deeleman-Reinhold (1978, 1993) and Chatzaki & Arnedo (2006). All measurements are in millimetres. The specimens were deposited in the collection of the Arachnological Museum of Kırıkkale University (KUAM).

Results

Stalagtia hercegovinensis (Nosek, 1905)

Material examined: 2♂, Gaziantep province, Şahinbey village, Burç forest (37°01'N, 37°17'E), 22.IV.2007, 968 m.

Description: Body length: 3.30, Prosoma: length 1.50, width 1.20, Abdomen: length 1.80, width 0.80. Prosoma is orange to light brown, smooth, its frontal part narrower, clearly differentiated from the rear part. Chelicerae covered with hairs arranged in two lines up from proximal to distal. Retromargin with one small tooth on the base of the cheliceral furrow. Another one of more or less size on its middle part. Promargin with two teeth of equal size. Eyes are very close to each other and the distance between AMEs less than half their diameter. Fovea is apparent. Abdomen is pale, off-white colour. Male tegulum is oval. Bulb nearly as wide as long. Embolus short and curly, around the conductor, longer than tegulum. Conductor is in the shape of a small thorn at the base of the embolus (Figs. 1-2). Leg formula: IV-I-II-III.

Distribution: Balkans to Crete (World Spider Catalog, 2016).

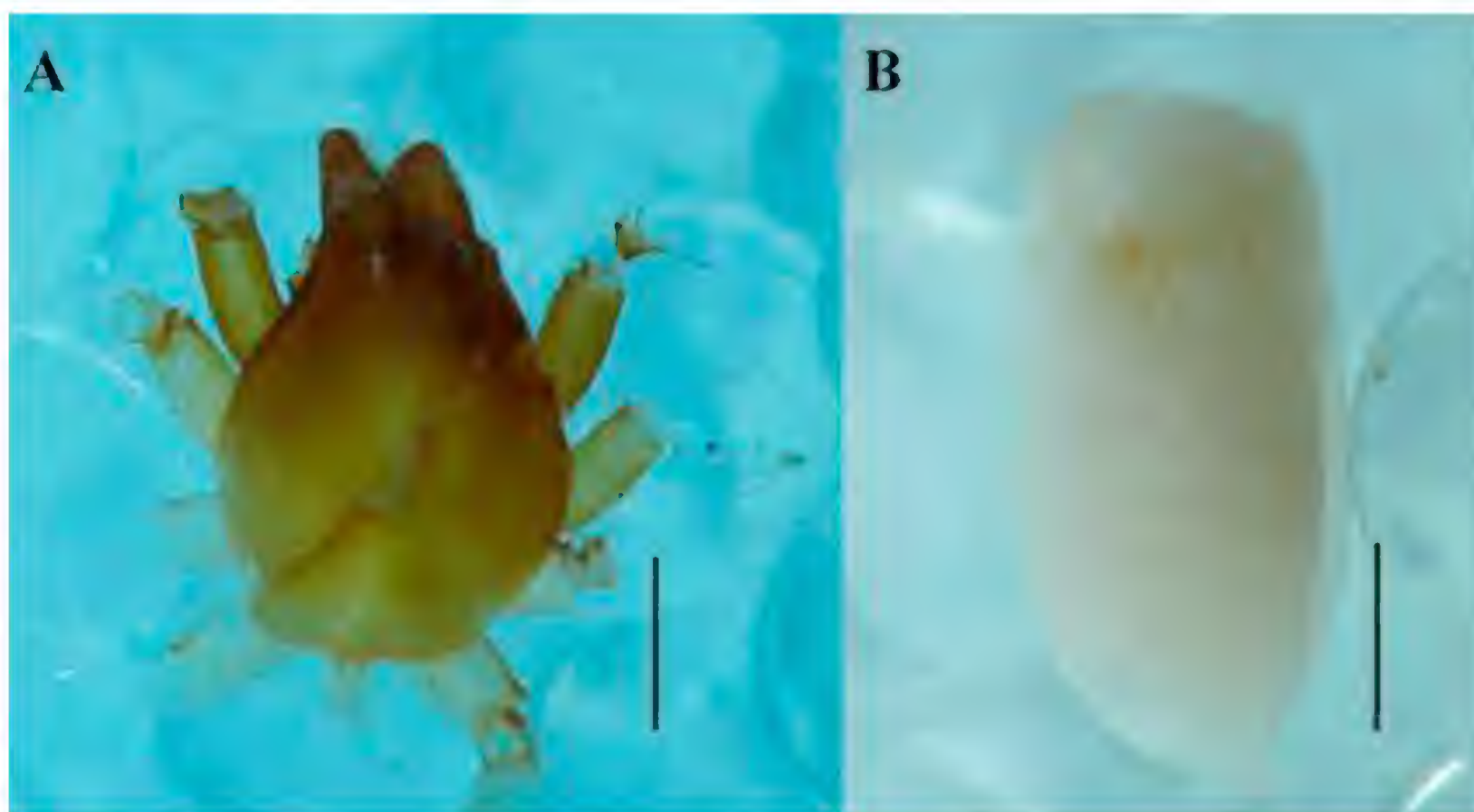


Fig. 1. *Stalagtia hercegovinensis* ♂. A. Prosoma, dorsal view. B. Abdomen, dorsal view. (Scale = 0.5 mm)



Fig. 2. *Stalagtia hercegovinensis* ♂. A. Prosoma, labium, maxillae, ventral view. B. Ocular area, dorsal view. (Scale = 0.5 mm)

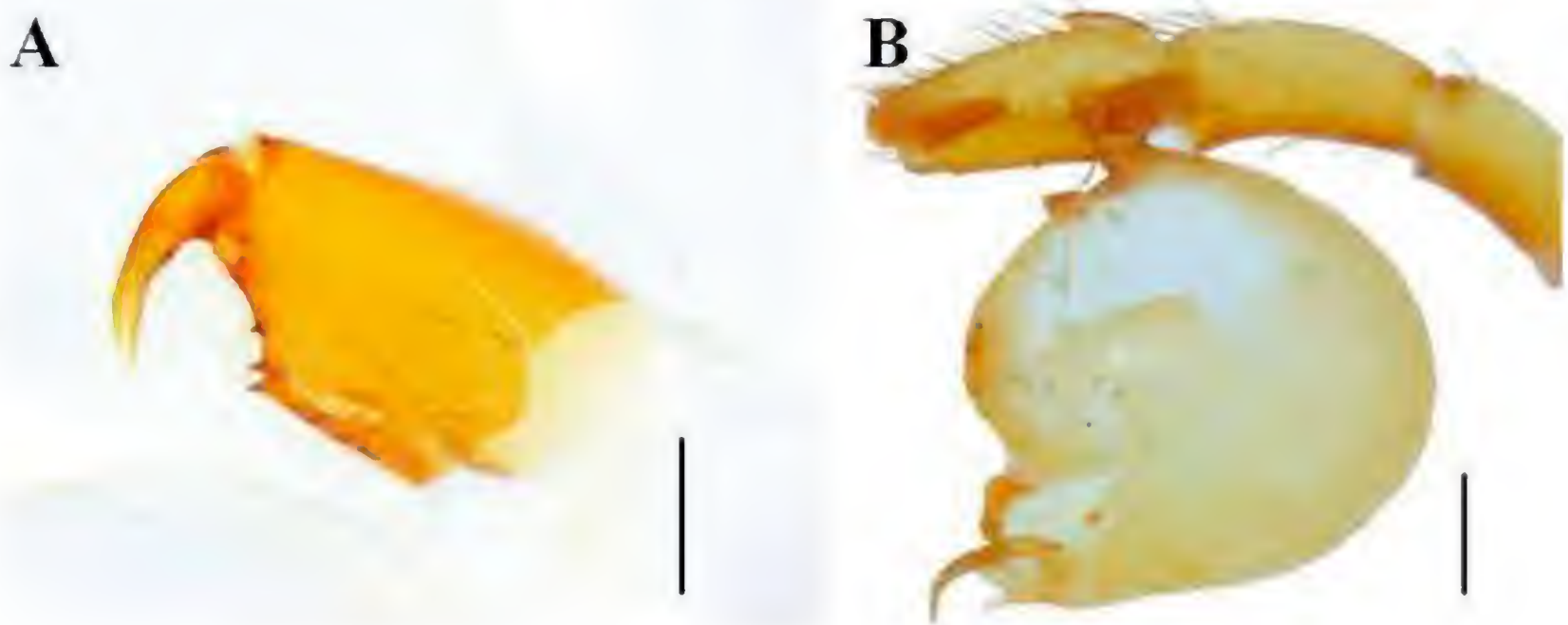


Fig. 3. *Stalagtia hercegovinensis* ♂. A. Chelicera. B. Palpal organ, lateral view. (Scale = 0.5 mm)

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***Walckenaeria cirriceps* Thaler, 1996, a new record from Turkey (Araneae: Linyphiidae)**

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Abstract

The linyphiid spider species *Walckenaeria cirriceps* Thaler, 1996 is recorded for the first time from Turkey. Its morphology is briefly described and illustrated.

Keywords: Araneae, Linyphiidae, *Walckenaeria cirriceps*, New record, Turkey.

Introduction

Order Araneae, spiders, form the largest group of Class Arachnida with 114 families, 3982 genera and 45942 species in the world (World Spider Catalog, 2016). Family Linyphiidae is represented by 601 genera and 4535 species (World Spider Catalog, 2016). Within Turkish spider fauna, with a total of 330 genera and 1017 species, Linyphiidae is represented by 116 species of 64 genera (Bayram *et al.*, 2016). In this paper, we add one linyphiid spider species as a new record to the spider fauna of Turkey. This species is *Walckenaeria cirriceps* Thaler, 1996.

Material and Methods

Two male specimens were examined in this study. These specimens were collected during the day by hand aspirator from sifter. The specimens were preserved in 70% ethanol. Pictures were taken using a Leica S8APO microscope by means of a Leica DC 160 camera. Identification of the species depended on the work of Thaler (1996). All measurements are in millimetres. The specimens were deposited in the collection of the Arachnological Museum of Kırıkkale University (KUAM).

Results

Walckenaeria cirriceps Thaler, 1996

Material examined: 2♂, Sinop Province, Sivrice Hill (41°48'01"N, 35°00'16"E), 620 m, 18.04.2010.

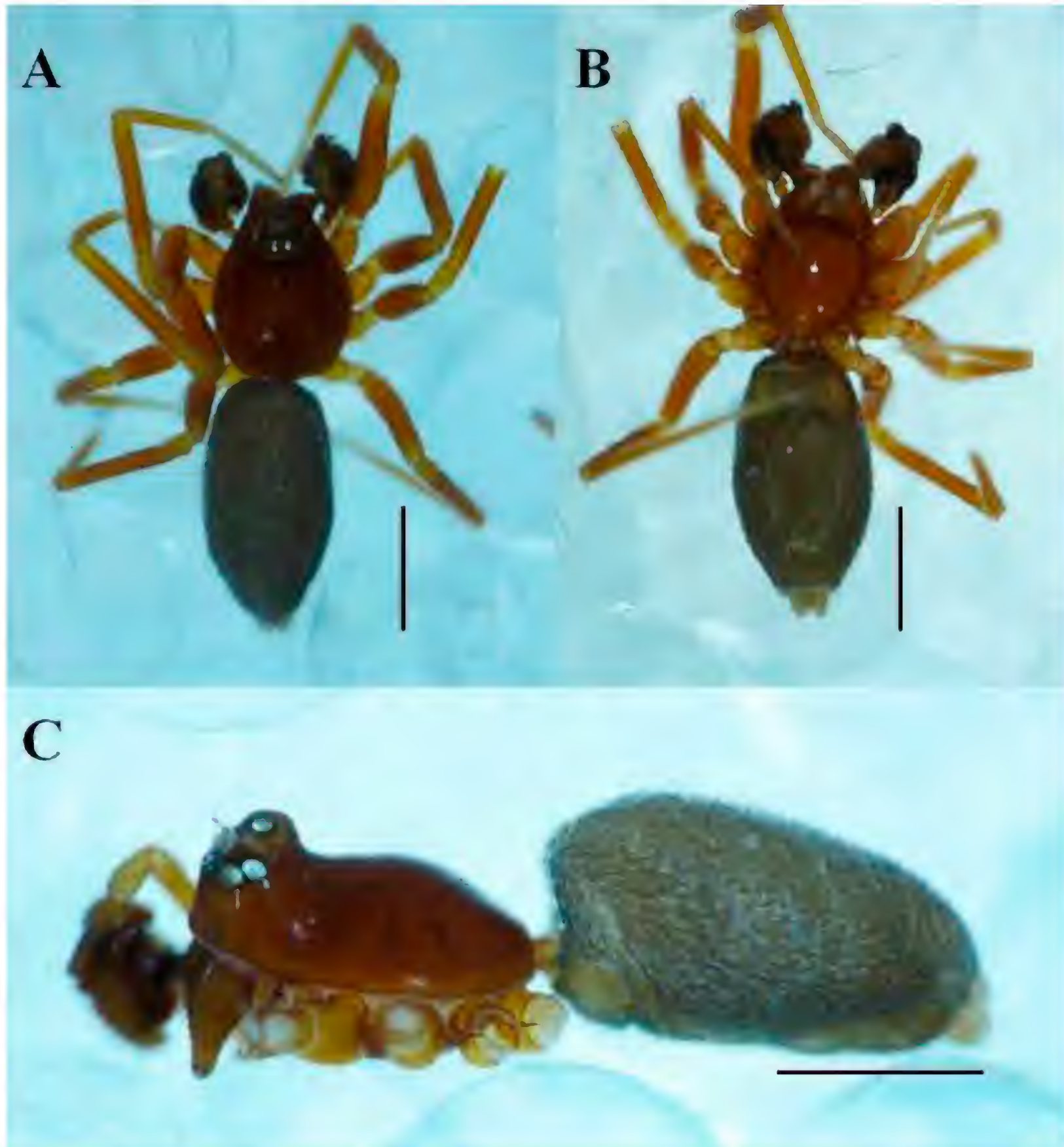


Fig. 1. *Walckenaeria cirriceps* ♂, habitus. A. dorsal view, B. ventral view, C. lateral view. (Scale = 0.5 mm)

Description of male: Body length: 1.60, Prosoma: length 0.70, width 0.40. Opisthosoma: length 0.90, width 0.50.

Prosoma is brown and its shape in lateral view as in Fig (1). Prosoma bears two lateral branched triple characteristic hairs between anterior and posterior median eyes. Male palpal tibia with a long curved apical apophysis. Embolus long, accompanied by a transparent membrane. Opisthosoma is dark grey. Legs are light brown (Fig. 2).

Lengths of legs: Table (1). Leg formula: IV-I-II-III.

Table 1. Measurements of the legs of the *Walckenaeria cirriceps* ♂.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	0.80	0.20	0.75	0.55	0.45	2.75
II	0.75	0.20	0.70	0.50	0.45	2.60
III	0.65	0.20	0.55	0.50	0.35	2.25
IV	0.85	0.20	0.85	0.70	0.45	3.05

Distribution: Greece (World Spider Catalog, 2016).



Fig. 2. *Walckenaeria cirriceps* ♂. A. Ocular area, frontal view. B. Prosoma, lateral view. C-E. Palp, lateral view. (Scale = 0.2 mm)

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Newly recorded species: *Steatoda cingulata* (Thorell, 1890) from India (Araneae: Theridiidae)

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Abstract

Genus *Steatoda* Sundevall, 1833 is represented by 2 species viz., *S. alboclathrata* (Simon, 1897) and *S. rufoannulata* (Simon, 1899) in India, in addition to 4 other cosmopolitan and pantropical species. *Steatoda cingulata* (Thorell, 1890) is a new addition to the Indian theridiid species.

Keywords: Araneae, Theridiidae, *Steatoda cingulata*, New record, Taxonomy, India.

Introduction

Family Theridiidae Sundevall, 1833 is cosmopolitan in distribution. Theridiidae currently includes 122 genera and 2462 species (World Spider Catalog, 2016). Among the 126 species of genus *Steatoda* recorded worldwide, 6 species are known from India; the endemic species *S. alboclathrata* (Simon, 1897), the oriental *S. rufoannulata* (Simon, 1899), the pantropical *S. erigoniformis* (O.P.-Cambridge, 1872), and 3 cosmopolitan species: *S. albomaculata* (De Geer, 1778), *S. grossa* (C.L. Koch, 1838), and *S. triangulosa* (Walckenaer, 1802) (Keswani *et al.*, 2012). *Steatoda cingulata* (Thorell, 1890) is widely distributed in China, Korea, Laos, Japan, Sumatra and Java (World Spider Catalog, 2016); it is now recorded from India too.

Material and Methods

Spiders were collected during September, 2015 from Mahendri region of Satpuda Range, India. Photographs of specimens were taken with Fuji camera. The material was preserved in 70% alcohol with all legs and pedipalps properly spread. Male palp was cleared in 10% KOH. All measurements are in mm. Leg measurements are given. Abbreviations used: AME = anterior median eye, ARE = anterior row of eyes, L = length, PRE = posterior row of eyes, W = width.

Identification of the species depended on the description and drawings of Yoshida (2001), Namkung (2003), and Yin *et al.* (2012).

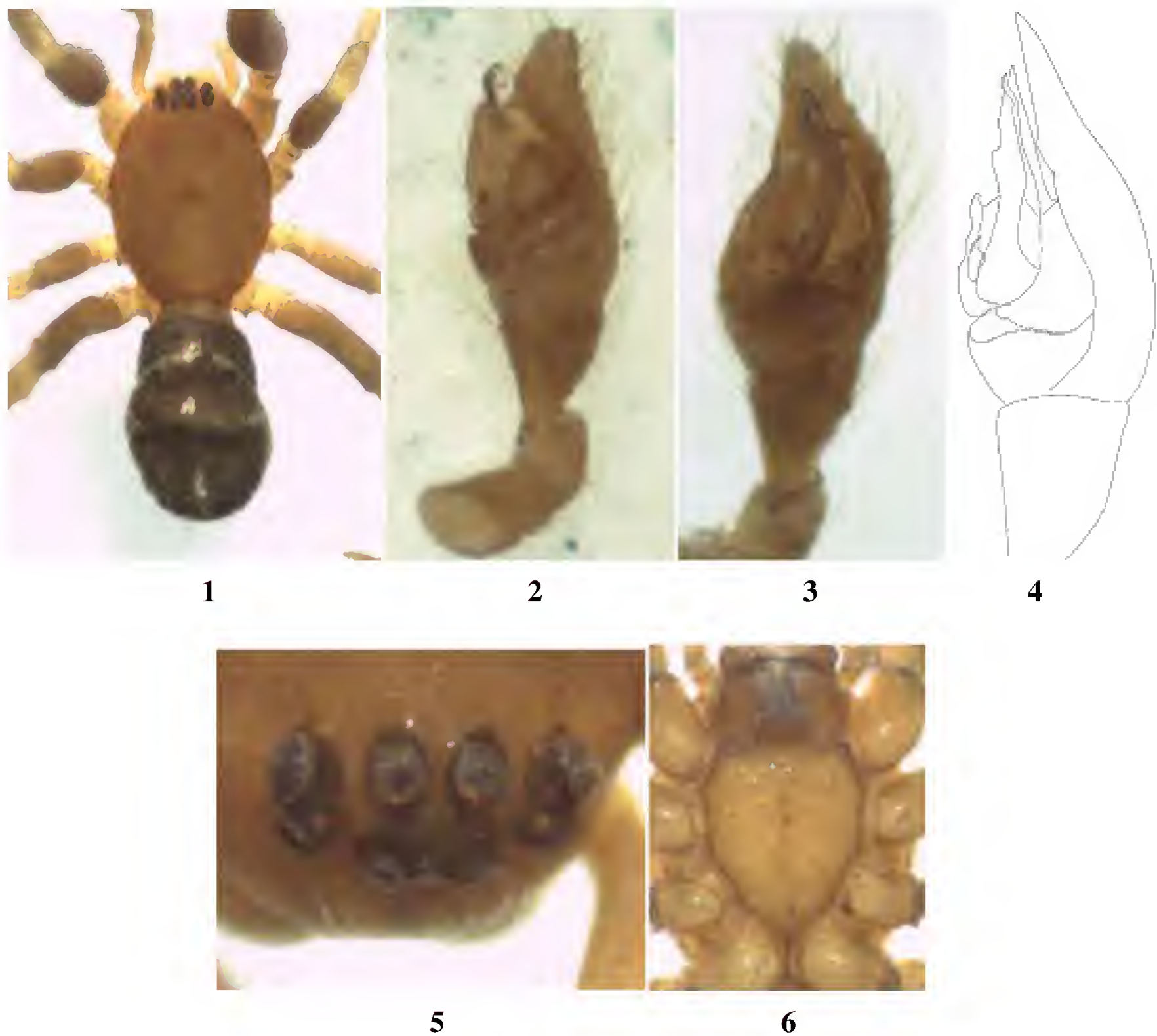
Taxonomy

Theridiidae Sundevall, 1833

Steatoda Sundevall, 1833

Steatoda cingulata (Thorell, 1890) (Figs. 1-6)

Material Examined: 2♂, India, Mahendri region of Satpuda Range, (21°22'18.13"N, 78°21'54.05"E, elev. 374 m), September 2015, leg. A. Rajoria [deposited in the collection of the Indian Society of Arachnology at FTI Chikhaldara].



Figs. 1-6. Male of *Steatoda cingulata* (Thorell, 1890). 1. Habitus, dorsal view. 2-4. Palpal organ. 2. prolateral view, 3. ventral view, 4. retrolateral view. 5. Eyes. 6. Sternum.

Description of male (Fig. 1): Medium sized spider with nearly oval to pear shaped carapace rebordered with sclerotised cuspules; abdomen with white band and spots on dorsum.

Total Length: 5.80; Carapace L 2.34, W 1.94; Abdomen L 3.26, W 1.87. Cephalothorax: Carapace light brownish in shade with prominent sclerotised cuspules rebordering carapace. Cephalic and thoracic region nearly similar in diameter and without

elevation. Fovea quite distinct, pit shaped. Eyes (Fig. 5) 8 in 2 equally length rows. All eyes nearly equal in size. ARE comparatively much recurved and PRE nearly straight. AME obliquely placed and appears tuberculated. Lateral eyes closely placed. Ocular quadrangle square. Clypeus raised and more than the diameter of AME. Maxillae nearly elongated and converging with scopulae and serrulae while labium rectangular, longer than wide. Strongly developed chelicerae with prominent cheliceral furrow showing a single highly sclerotised tooth on promargin. Chelicerae bearing a strong fang. Sternum (Fig. 6) triangular to shield shaped, with sinuous sides and sternal surface uniformly clothed with strong, converging spines; anterior margin with slightly concave surface and appears fused with labium. Legs long and strong with 3 dentate claws; 1st pair of legs comparatively much robust and femur quite strong and broad; femur I with rowed, dissimilarly sized, cusps on ventral side. Coxae of all legs broad.

Legs measurements (Table 1). Leg formula: I-IV-II-III.

Table 1. Measurements of the legs of *Steatoda cingulata* (Thorell, 1890) ♂.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	2.33	0.36	2.02	0.87	0.68	6.26
II	2.24	0.41	2.08	0.72	0.52	5.97
III	1.46	0.30	0.55	0.42	0.39	3.12
IV	2.18	0.50	2.08	0.76	0.59	6.11

Abdomen blackish brown with a crescent shaped yellowish white band around anterior margin and with 2 dorsal elongated spots or lines, dorsum decorated with scattered hairs. Venter similar in shade as that of dorsum but lacking any spots and lines. Spinnerets small and compactly arranged.

Palpal organ slightly elongated with cymbium having projecting distal tip while distally extending membranous embolus and conductor, subtegulum distinct (Figs. 2-4).

Remark: This particular species was cited wandering with ants. It was a bit difficult to differentiate it from ants at first sight.

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Newly recorded species: *Parasteatoda oxymaculata* (Zhu, 1998) from India (Araneae: Theridiidae)

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Abstract

Parasteatoda oxymaculata (Zhu, 1998) is a new addition to the Indian theridiid species. Formerly, this genus was represented by 3 species: *P. brookesiana* (Barrion & Litsinger, 1995), *P. mundula* (L. Koch, 1872), and *P. tepidariorum* (C.L. Koch, 1841) from India. This newly recorded species is already known from China and Laos.

Keywords: Araneae, Theridiidae, *Parasteatoda oxymaculata*, New record, India.

Introduction

Theridiidae Sundevall, 1833 is cosmopolitan in distribution. Theridiidae currently includes 122 genera and 2462 species (World Spider Catalog, 2016). *Parasteatoda* Archer, 1946 is represented in India by 3 species: *P. brookesiana* (Barrion & Litsinger, 1995), *P. mundula* (L. Koch, 1872), and *P. tepidariorum* (C.L. Koch, 1841) (Keswani *et al.*, 2012). *Parasteatoda oxymaculata* (Zhu, 1998), with many other species of genus *Achaearanea* Strand, 1929, have been transferred to genus *Parasteatoda* Archer, 1946 by Yoshida (2008). *P. oxymaculata* is distributed in China and Laos (World Spider Catalog, 2016) and now it is recorded from India for the first time.

Material and Methods

The studied spider was collected during September, 2015 from Mahendri region of Satpuda Range, India. Photographs of the specimen were taken with Fugui camera. It was preserved in 70% alcohol with all legs spread properly. Epigyne was cleared with 10% KOH. All measurements are in mm. Leg measurements are given.

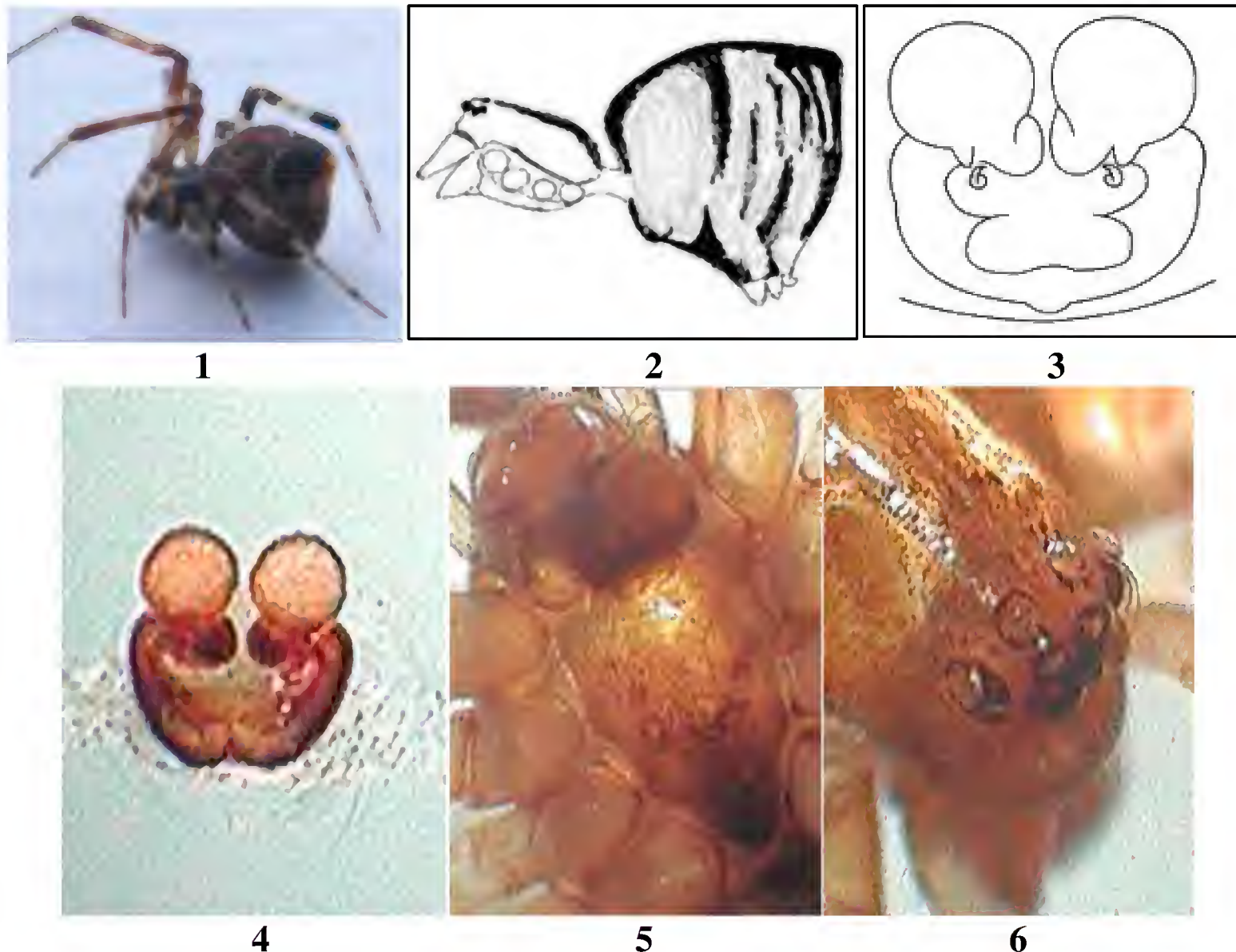
Abbreviations used: AME = anterior median eye, ARE = anterior row of eyes, L = length, PRE = posterior row of eyes, W = width.

Identification of the species depended on the drawings of Zhu (1998), Song *et al.* (1999), and Yin *et al.* (2012).

Taxonomy
Theridiidae Sundevall, 1833
Parasteatoda Archer, 1946

Parasteatoda oxymaculata (Zhu, 1998) (Figs. 1-6)

Material Examined: 1♀, India, Mahendri region of Satpuda Range, (21°22'18.13"N, 78°21'54.05"E, elev. 374 m), September 2015. Specimen will be deposited in the collection of the Indian Society of Arachnology at FTI Chikhaldara.



Figs. 1-6. Female of *Parasteatoda oxymaculata* (Zhu, 1998). 1-2. Habitus, lateral view. 3-4. Epigyne, dorsal view. 5. Sternum. 6. Eyes.

Description of female (Figs. 1-2): Medium sized spider with three tarsal claws, carapace light in shade, longer than wide; abdomen with cryptic dorsal pattern.

Total Length: 5.41; Carapace L 2.01, W 0.97; Abdomen L 3.19, W 1.97.

Cephalothorax: Carapace longer than wide, yellow in shade. Carapace flat but with slightly raised head region with scattered hairs. Fovea indistinct. Eyes 8 in 2 rows (Fig. 6). Both rows of eyes recurved, ARE comparatively much recurved than PRE. AME comparatively bigger and darker. Ocular quadrangle nearly rectangular, more in length than width. Lateral eyes comparatively contiguous. Maxillae strong and robust, furnished with few scattered bristles (Fig. 5). Labium slightly longer than wide; it appears fused to the sternum. Chelicerae well developed and furrow without teeth. Sternum light in colour, showing scattered hairs on complete sternal surface, anterior margin nearly straight, with sinuous sides and posteriorly narrowing between coxae IV (Fig. 5). Legs long and slender, three clawed, with 1st pairs being the longest. Trichobothria on tibiae of all segments. Legs furnished with spines and hairs. Coxae of leg IV broadest. Female palp well developed and with a dentate claw.

Leg measurements (Table 1). Leg formula: I-IV-II-III.

Table 1. Measurements of the legs of *Parasteatoda oxymaculata* (Zhu, 1998) ♀.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	2.28	0.85	2.44	2.59	0.86	9.02
II	2.53	0.98	2.94	0.33	0.43	7.21
III	1.24	0.64	1.36	1.48	0.45	5.17
IV	2.47	0.83	2.67	2.23	0.76	8.96

Abdomen greyish brown, with cryptic dorsal pattern (Figs. 1-2). Abdomen clothed with scattered hairs. Venter, comparatively lighter in shade, lacking any spots and bands. Spinnerets small and compact. Colulus indistinct.

Epigyne sclerotised having small copulatory opening and with curved ducts. Round light brownish spermathecae attached at apical end of the ducts. Fertilisation ducts very small and narrow (Figs. 3-4).

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Serket (2016) vol. 15(1): 56-59.

Newly recorded species: *Euryopsis episinoides* (Walckenaer, 1847) from India (Araneae: Theridiidae)

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Abstract

The distribution of *Euryopsis episinoides* (Walckenaer, 1847) is in the Mediterranean region and China. Now it is reported for the first time from India. Three species of *Euryopsis* are known from India till date viz., *E. nubila* Simon, 1889, *E. megalops* (Caporiacco, 1934), and *E. venutissima* (Caporiacco, 1934). *E. episinoides* (Walckenaer, 1847) is a new addition to the theridiid fauna of India.

Keywords: Araneae, Theridiidae, *Euryopsis episinoides*, New record, Taxonomy, India.

Introduction

Theridiidae Sundevall, 1833 is cosmopolitan in distribution. Theridiidae currently includes 122 genera and 2462 species (World Spider Catalog, 2016). Genus *Euryopsis* Menge, 1868 is represented by 3 species in India: *E. nubila* Simon, 1889, *E. megalops* (Caporiacco, 1934), and *E. venutissima* (Caporiacco, 1934); the last two species are recorded from Karakorum (Keswani *et al.*, 2012).

The distribution of *Euryopsis episinoides* (Walckenaer, 1847) is in the Mediterranean region and China. This is the first record of *E. episinoides* from India. It is a new addition to the theridiid fauna of India.

Material and Methods

Spiders were collected during September, 2015 from Mahendri region of Satpuda Range, India. Photographs of specimens were taken with Fuji camera. The material was preserved in 70% alcohol with all legs and pedipalps spread properly. Male pedipalp was

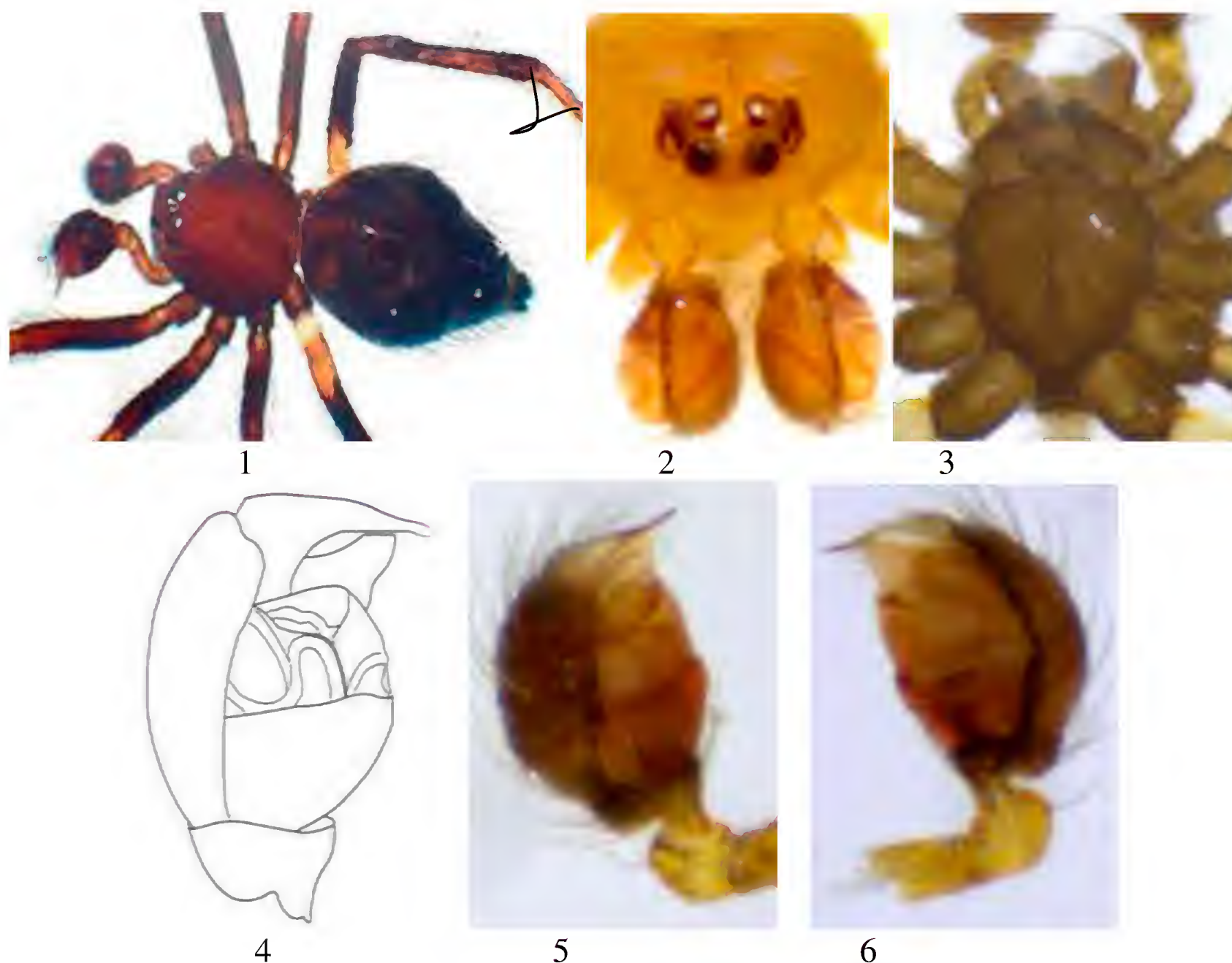
cleared with 10% KOH. All measurements are in mm. Leg measurements are given. Abbreviations used: AME = anterior median eyes, ARE = anterior row of eyes, L = length, LE = lateral eyes, PME = posterior median eyes, PRE = posterior row of eyes, W = width.

Identification of the species depended on the descriptions and drawings of Levy & Amitai (1981), Zhu (1998), Song *et al.* (1999), and Marusik *et al.* (2009).

Taxonomy
Theridiidae Sundevall, 1833
Euryopsis Menge, 1868

Euryopsis episinoides (Walckenaer, 1847) (Figs. 1-6)

Material Examined: 3♂, India, Mahendri region of Satpuda Range, (21°22'18.13"N, 78°21'54.05"E, elev. 374 m), September 2015. Two specimens were found wandering on ground while one was collected from a lily plant. Specimens will be deposited in the collection of the Indian Society of Arachnology at FTI Chikhaldara.



Figs. 1-6. Male of *Euryopsis episinoides* (Walckenaer, 1847). 1. Habitus, dorsal view. 2. Eyes. 3. Sternum. 4-6. Palpal organ. 4-5. prolateral view. 6. retrolateral view.

Description of male (Fig. 1): Dark coloured, small araneomorph, ecribellate spider with slightly long, slender, and almost laterigrade legs bearing three claws.

Total Length: 6.74; Carapace L 2.82, W 1.82; Abdomen L 3.58, W 1.99.

Cephalothorax: Carapace longer than wide, comparatively lighter in shade, almost round to nearly oval in shape, with blunt anterior apex. Cephalic region bearing long fine setae while thoracic region completely lacking them. Eyes (Fig. 2) located on comparatively elevated ocular area. Fovea distinct shallow pit-shaped and few scattered setae can be seen near its anterior region. Eight eyes arranged in 2 rows, with slightly recurved ARE while PRE almost straight. All eyes almost equal in size, with shiny sheet except AME which are black coloured and are the smallest among them. PME comparatively closer to each other than AME, while LE are contiguous, obliquely placed and appear as if they are fused. Long, paired setae are arising from the base of AME, PME and LE. Ocular area quite elevated, comparatively compact. Ocular quadrangle longer than wide, trapezoid to roughly rectangular, widened anteriorly and narrowed posteriorly. Clypeus slightly elevated and a little wider. Maxillae, strongly converging, elongated, brown, well-developed, broadened base and narrowed apical region. Maxillae furnished with strong slightly curved spines of dissimilar length, scattered completely on the maxillae surface. Basal surface devoid of any modification while apical region showing serrula and absence of scopular bunch. Labium comparatively smaller, almost half the length of maxillae. Labium roughly triangular (Fig. 3), having brown basal and apical regions. Chelicerae lacking teeth, but a row of long, equally spaced, stiff, slightly curved hairs (8-12) appearing like a comb can be seen in middle of the cheliceral furrow. Fang nearly crystalline with broad base and very fine slightly converging, needle-like thereafter. Sternum dark, fairly broad, somewhat wider than broad, shield-shaped, with prominent sinuous sides, eventually ending in between the coxae of the legs. Anteriorly blunt while posteriorly continuing in between coxae IV and separating them diametrically almost of their width (Fig. 3). Presence of a black vertical thin line in middle of sternum and indistinct radiating striations can also be seen. Surface of sternum lacking any pits or tubercles but showing scattered, variably length setae. Legs moderately long, of reddish brown colour with black annulations on segments near the joints, almost laterigrade with legs 1 & 4 and 2 & 3 almost equal in length. Tarsus bears three claws, without claw tufts, but with moderately developed onychium. Superior claws equal in length and are dentate (4-6) while median one is smaller and lacking dentition. Trichobothria absent on coxa, trochanter, femur and patella while two rows present on metatarsus and tarsus, and three rows on tibia can be seen on all legs. Spines scattered on the segments of all legs. Coxae of all legs are equal in length and diameter, but coxae IV comparatively a little bit broader. Trochanter IV comparatively longer than rest of the trochanters. Absence of any kind of stubby hairs or fringe of fine hairs on coxae and trochanters. Leg measurements (Table 1). Leg formula: IV-I-II-III.

Table 1. Measurements of the legs of *Euryopis episinoides* (Walckenaer, 1847) ♂.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	1.51	0.49	0.97	0.82	0.63	4.42
II	1.13	0.44	0.92	0.80	0.60	3.89
III	0.98	0.46	0.80	0.87	0.55	3.66
IV	1.14	0.60	1.18	1.10	0.83	4.85

Abdomen dark black, elongated, longer than wide, comparatively broader anteriorly and narrowed posteriorly, densely clothed with unequally long black hairs and showing two

pairs of depressions or sigillar dots which are the muscle attachment points. Well-developed spinnerets, surrounded with a ring of long fine white hairs. Anterior pair is comparatively stronger, broader and having few scattered hairs on the surface. Median pair embedded within the anterior and posterior spinnerets and is comparatively smaller. Posterior one, on the other hand, appears three segmented and comparatively thickly clothed with fine hairs. All spinnerets lack bunch of hairs at the apical segment.

Palpal tibia cup shaped, cymbium is furnished with long scattered hairs. The conductor apex is quite sharp, short, twisted and is showing serrations on the upper margins. Genital bulb nearly elongate and compact. Tegular region is quite sclerotised, but without any apophysis. Recepticulum seminis long, coiled within, and forming “S-shape”. Embolus ended with the twisted conductor. Median apophysis appearing like a protuberance coming of the bulbous of the palp (Figs. 4-6).

Remark: Genus *Euryopis* Menge, 1868 is similar to genus *Emertonella* Bryant, 1945 that is recently recorded from India (Rajoria, 2015).

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First record of genus *Orchestina* Simon, 1882 in India (Araneae: Oonopidae)

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Abstract

Orchestina truncatula Tong & Li, 2011 and genus *Orchestina* Simon, 1882, of Family Oonopidae Simon, 1890 are recorded from India for the first time.

Keywords: Araneae, Oonopidae, *Orchestina truncatula*, New record, India.

Introduction

Family Oonopidae Simon, 1890 is cosmopolitan in distribution. Genus *Orchestina* Simon, 1882 includes 71 species worldwide, out of which 9 species are recorded from China, 4 from Sri Lanka, 3 from Japan, and 1 from Bhutan (World spider catalog, 2016). *Orchestina* Simon, 1882 is a newly recorded genus from India. No species of this genus is recorded from India till now.

Oonopids are small, haplogyne, 6 eyed spiders, commonly called as goblin spiders, can be found dwelling on ground and in canopy. Oonopidae includes 1624 species under 113 genera (World spider catalog, 2016). Only 10 genera and 34 species are present in India till date (Keswani *et al.*, 2012). *Orchestina truncatula* Tong & Li, 2011, is a newly reported species for India.

Material and Methods

One spider was collected by hand in December, 2014 from Melghat region of Maharashtra, India. Photographs of the specimen were taken with Fuji camera. The material was preserved in 70% alcohol with all legs and pedipalps spread properly. Male pedipalp was cleared with 10% KOH. All measurements are in mm. Leg measurements are given.

Identification of the specimen depended on the descriptions and drawings of Tong & Li (2011) and Tong (2013).

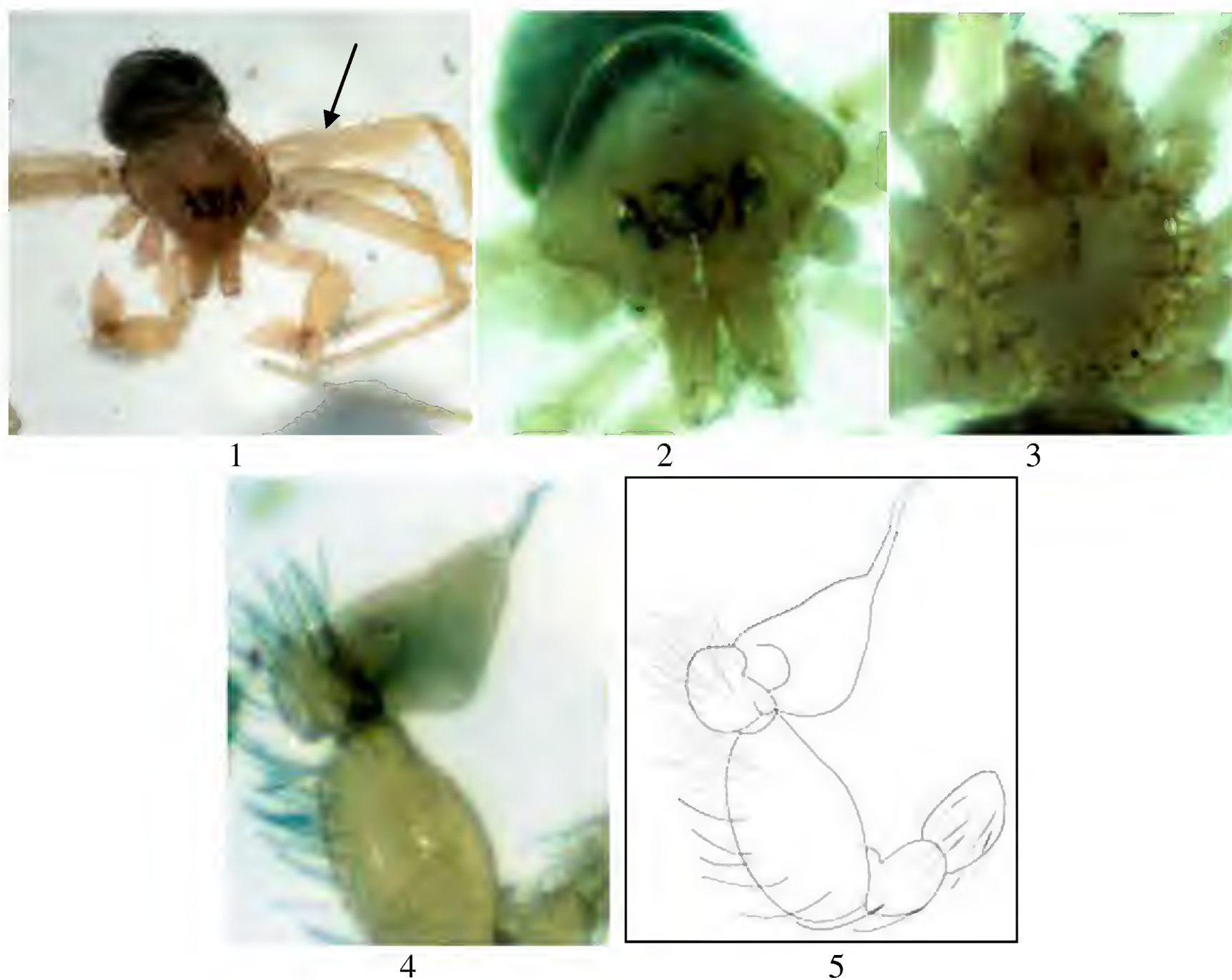
Taxonomy
Oonopidae Simon, 1890
Orchestina Simon, 1882

Genus *Orchestina* is diagnosed by the presence of: swollen femur of leg IV, 'H' shaped eye arrangement, recurved posterior row of eyes, high clypeus, and enlarged male palpal tibia, usually wider than femur.

Species is identified as *O. truncatula* Tong & Li, 2011 on the basis of the presence of "three long setae on the distal region of the male chelicerae, .. the greatly enlarged male palpal tibia, .. the simple curved seminal duct" (Tong & Li, 2011).

Orchestina truncatula Tong & Li, 2011 (Figs. 1-5)

Material examined: 1♂, India, Melghat region of Maharashtra, (21°26'45"N, 77°11'50"E), December 2014, deposited in the collection of the Indian Society of Arachnology at FTI Chikhaldara.



Figs. 1-5. Male of *Orchestina truncatula* Tong & Li, 2011. 1. Habitus. 2. Eyes. 3. Sternum, maxillae and labium. 4-5. Palp, retrolateral view.

Description of male (Fig. 1): Quite small spider, yellow, with pale yellowish legs and abdomen light brownish.

Total Length: 1.31; Carapace L 0.60, W 0.47; Abdomen L 0.61, W 0.46.

Cephalothorax: Carapace yellow, glabrous and oval, with a black to dark brown faint striations creating a mesh pattern. Eyes (Fig. 2): six, compactly arranged, pearly white in alcohol, eyes encircled by black colour. Clypeus quite high, without modified margins.

Sternum nearly shield-shaped, furnished with spotty surface of brown colour, absence of sinuous sides, anteriorly nearly straight while posteriorly ending beyond coxae IV (Fig. 3). Scattered, converging long hairs present. Chelicerae well developed, without cheliceral furrow, without teeth, provided with a row of long converging hairs on dorso-apical region and a small apophysis on dorso-basal region. Maxillae elongated, nearly parallel, depressed in middle, serrula absent, with scattered black hairs. Labium longer than wide, roughly triangular, appears to be fused with the sternum (Fig. 3). Legs pale yellowish, femur IV quite broadened and swollen (marked with arrow in Fig. 1). Femur of all other legs I-III normal. Tarsi with 2 claws, distinct onychium, and without scopulae.

Leg measurements (Table 1). Leg formula: IV-I-II-III.

Table 1. Measurements of the legs of *Orchestina truncatula* Tong & Li, 2011 ♂.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	0.41	0.12	0.42	0.46	0.23	1.64
II	0.40	0.11	0.43	0.44	0.24	1.62
III	0.33	0.10	0.29	0.28	0.24	1.24
IV	0.62	0.12	0.34	0.36	0.26	1.70

Abdomen slightly longer than wide, dorsum decorated with brown lines forming a net or mesh of lines. Other modifications absent. Venter, comparatively lighter in shade. Spinnerets small, compact and without any modifications, anterior and posterior spinnerets similar in length while median spinnerets comparatively smaller.

Palp is quite simple; bulb is elongated with sharp and slightly wavy embolus. Tibia is short and femur is quite broad almost double in length and width. Seminal duct quite coiled and is visible inside the bulb (Figs. 4-5).

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The first record of *Ostearius melanopygius* (O. Pickard-Cambridge, 1879) and genus *Ostearius* Hull, 1911 (Araneae: Linyphiidae) in Egypt

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Abstract

Ostearius melanopygius (O. Pickard-Cambridge, 1879) and genus *Ostearius* Hull, 1911 of family Linyphiidae are recorded from Egypt for the first time.

Keywords: Spiders, Linyphiidae, *Ostearius melanopygius*, Menoufiya, Beheira, Egypt.

Introduction

Family Linyphiidae Blackwall, 1859 is the second greatest spider family (4535 species of 601 genera) after Salticidae (5862 species of 595 genera). Genus *Ostearius* Hull, 1911 includes only 2 species, i.e. the cosmopolitan species *Ostearius melanopygius* (O. Pickard-Cambridge, 1879) and *Ostearius muticus* Gao, Gao & Zhu, 1994 from China (World spider Catalog, 2016).

Ostearius melanopygius was described for the first time as *Linyphia melanopygia* from New Zealand by Pickard-Cambridge (1879) depending on a single adult male (Fig. 1). A synonym of this species was later described as *Tmeticus nigricauda* from Britain by Pickard-Cambridge (1907) depending on both sexes. Hull (1911) established genus *Ostearius* to include *Tmeticus nigricauda*.

Later, *O. melanopygius* was recorded from several countries. During the last ten years, it was recorded for the first time from Algeria and Tunisia (Bosmans, 2007), Turkey (Bayram *et al.*, 2007), and Finland (Pajunen *et al.*, 2008).

In Egypt, linyphiid spiders are poorly studied. El-Hennawy (2006) recorded only 8 species of 8 genera of this family. This new record adds a genus and a species to the spider fauna of Egypt.

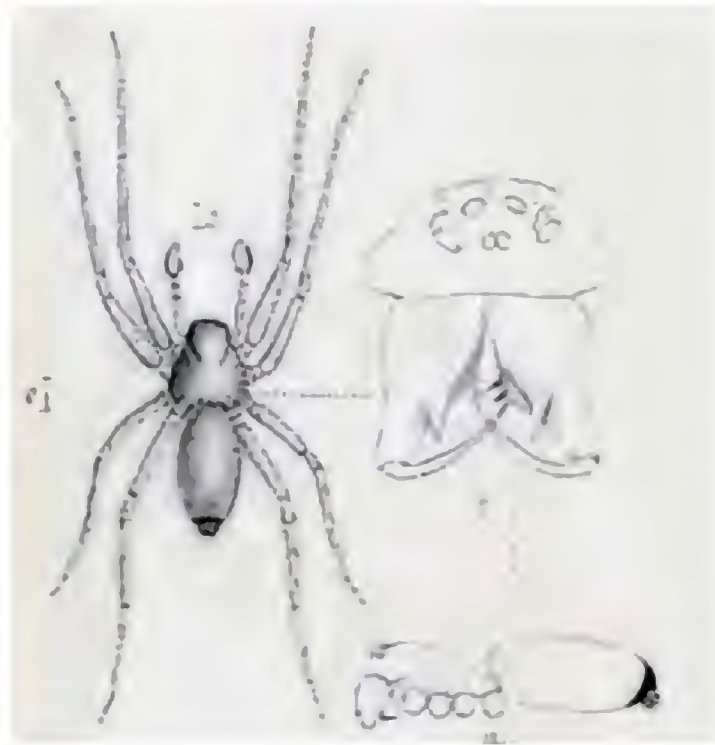


Fig. 1. Drawings of the first specimen of *Ostearius melanopygius* described by Pickard-Cambridge (1879: Plate LIII, fig. 13).

In this work, several specimens of *O. melanopygius* were collected, by hand, by the last two authors during their studies on the spiders of Mango orchards and other cultivations in El-Sadat City, Menoufiya Governorate (AE) and from Banana and Mango orchards in Badr district, EL-Beheira Governorate, north-west of Cairo (IZ).

The identification of *O. melanopygius* depended on the descriptions and drawings of Pickard-Cambridge (1879, 1907), Roberts (1987), Millidge (1988), Ono *et al.* (2009), and Oger (2016).

Abbreviations used: AL = Abdomen length, CL = cephalothorax length; CW = cephalothorax width; TL = total length. All measurements were taken in millimetres.

***Ostearius melanopygius* (O. Pickard-Cambridge, 1879)**
(Figs. 1-10)

Synonyms, taxonomic references, and distribution: see World spider Catalog (2016).

Material examined: 4♂4♀. Egypt, Menoufiya, El-Sadat City (30°20'57.20"N, 30°31'44.88"E, elevation 49m), Mango orchard, 2♀, 8.2.2014, leg. A. El-Gendy; Egypt, EL-Beheira, Badr district (30°36'45"N, 30°37'34"E, elevation 22m), Banana orchard, 3♂1♀, 28.12.2013, Mango orchard, 1♂1♀, 2.1.2014, leg. I. Zaher.

Description. See: Pickard-Cambridge (1879, 1907), Roberts (1987), and Millidge (1988). Habitus, male (Fig. 3) and female (Figs. 2, 7-8).

Male pedipalp. Figs. (4-6). Female epigynum. Figs. (9-10).

Measurements. Male: TL 1.86, CL 0.96, CW 0.78, CL/CW 1.23, AL 0.9.
Female: TL 2.62, CL 1.06, CW 0.86, CL/CW 1.23, AL 1.56.

The most characteristic features of *O. melanopygius* are:

It "has a highly characteristic general appearance, the abdomen being reddish with its posterior tip black" (Roberts, 1987).

Male distinguished by the unique, bifid form of the retrolateral tibial apophysis and the long, gently curved, rigid embolus. Female distinguished by the presence of a median septum connecting the dorsal plate to the ventral plate (Miller, 2007).



Figs. 2-6. *Ostearius melanopygius* (O. Pickard-Cambridge, 1879)
 2-3. Habitus, dorsal view. 2. Female. 3. Male. 4-6. Male pedipalp.
 4. retrolateral view. 5. ventral view. 6. prolateral view.

Distribution. This species is cosmopolitan with a world-wide distribution (World spider Catalog, 2016). Its distribution was discussed by Holm (1962), Denis (1963), and Helsdingen (1977). It was recorded from the following countries: Europe (England, France, Spain, Portugal, Belgium, Germany, Austria, Czech, Slovakia, Sweden, Finland). Iceland. Atlantic Islands (Azores, Madeira, Canary Islands), St. Helena. Morocco, Algeria, Tunisia. East Africa (Kenya), Angola. Turkey, China, Korea, Japan. Australia, New Zealand, St. Paul Island, Amsterdam Island, Bass Island (one of the Tubuai Islands, French Polynesia). Canada, USA, Hawaii. South America (Peru, Chile, Brazil, Argentina, Tierra del Fuego).

Acknowledgments

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Figs. 7-10. *Ostearius melanopygius* (O. Pickard-Cambridge, 1879) ♀.
7-8. Habitus. 7. dorsal view. 8. ventral view. 9-10. Abdomen, ventral view
showing epigynum (2 different females).

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Serket (2016) vol. 15(1): 68-70.

A note on *Oecobius amboseli* Shear & Benoit, 1974 (Araneae: Oecobiidae)

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Abstract

This short note on *Oecobius amboseli* Shear & Benoit, 1974 presents photographs of the species in Egypt, discusses its distribution in the world, and states the identification of *Oecobius* sp. in Murphy & Roberts (2015).

Keywords: Spiders, Oecobiidae, *Oecobius amboseli*, East Africa, Europe.

Among the known 84 species and 2 subspecies of genus *Oecobius* Lucas, 1846 (World spider Catalog, 2016), *Oecobius amboseli* Shear & Benoit, 1974 is greatly synanthropic. Its female was described by Shear & Benoit (1974) from Massai Amboseli Reserve, Kenya.

After 30 years, El-Hennawy (2004) described the male and redescribed the female from Cairo, Egypt and recorded it from Uganda, Rubaga, Kampala (material collected by David Penney).

Later, Toft & Wunderlich (2012) recorded *O. amboseli* from Denmark. An abundant population of at least several hundred individuals was discovered in the cellar in Aarhus University, Denmark. They said that: "The synanthropic occurrence in all cases except probably the type locality casts doubt in the true origin of the species, so it must so far be assumed to be East African. However the finds in Egypt and now in Denmark indicate that the species is in an initial phase of possibly worldwide spreading by human transport, as has been the case for several other *Oecobius* species."

The second European record was that of IJland (2013) who reported *O. amboseli* from Leiden, The Netherlands (1♀) and from Bahir Dar, Ethiopia (2♀) too.

Henrard, Van Keer & Jocqué (2014) reported *O. amboseli* for the first time from Belgium (Tervuren, "Palais des Colonies" of the Royal Museum for Central Africa and Duffel) and from Rwanda (Akagera and Kigali). They discussed the distribution of the species in East Africa and in Europe and their published fine illustrations can be seen on the website of Oger (2016) too.

Murphy & Roberts (2015) presented, in the Appendix: Genitalia of Part II of their "*Spider families of the world and their spinnerets*" Fig. 15, 13113, JAM, Kenya, drawings of both male and female genitalia of *Oecobius* sp. that can be identified as *Oecobius amboseli* Shear & Benoit, 1974. Kenya is the type locality of *O. amboseli*.

These recent records of *O. amboseli* in Europe denote that it is "possibly worldwide spreading by human transport" (Toft & Wunderlich, 2012) and that it is synanthropic. The three European records are related to cities that have universities and receive students from different countries, including Africa, and their luggage may transfer egg sacs and/or spiders from their original countries.

Among the 9 species of genus *Oecobius* known from Europe (Nentwig *et al.*, 2016), 2 of them are cosmopolitan [*O. cellariorum* (Dugès, 1836) and *O. navus* Blackwall, 1859], and only *O. amboseli* that has its unique situation as an "introduced" species that spreads slowly in Europe.

Family **Oecobiidae** Blackwall, 1862
Genus ***Oecobius*** Lucas, 1846

Oecobius amboseli Shear & Benoit, 1974

Oecobius amboseli Shear & Benoit, 1974: 717, f. 24-25 (D♀).

Oecobius amboseli El-Hennawy, 2004: 69, f. 1-11 (♀, D♂).

Oecobius amboseli Toft & Wunderlich, 2012: 248, f. 1-3 (♂♀).

Oecobius amboseli IJland, 2013: 39, f. 1 (♀).

Oecobius amboseli Henrard, Van Keer & Jocqué, 2014: 5, f. 3, 4A-D, 5A-C, 6A-D (♂♀).

Oecobius sp. Murphy & Roberts, 2015: 529, f. 15 (♂♀).

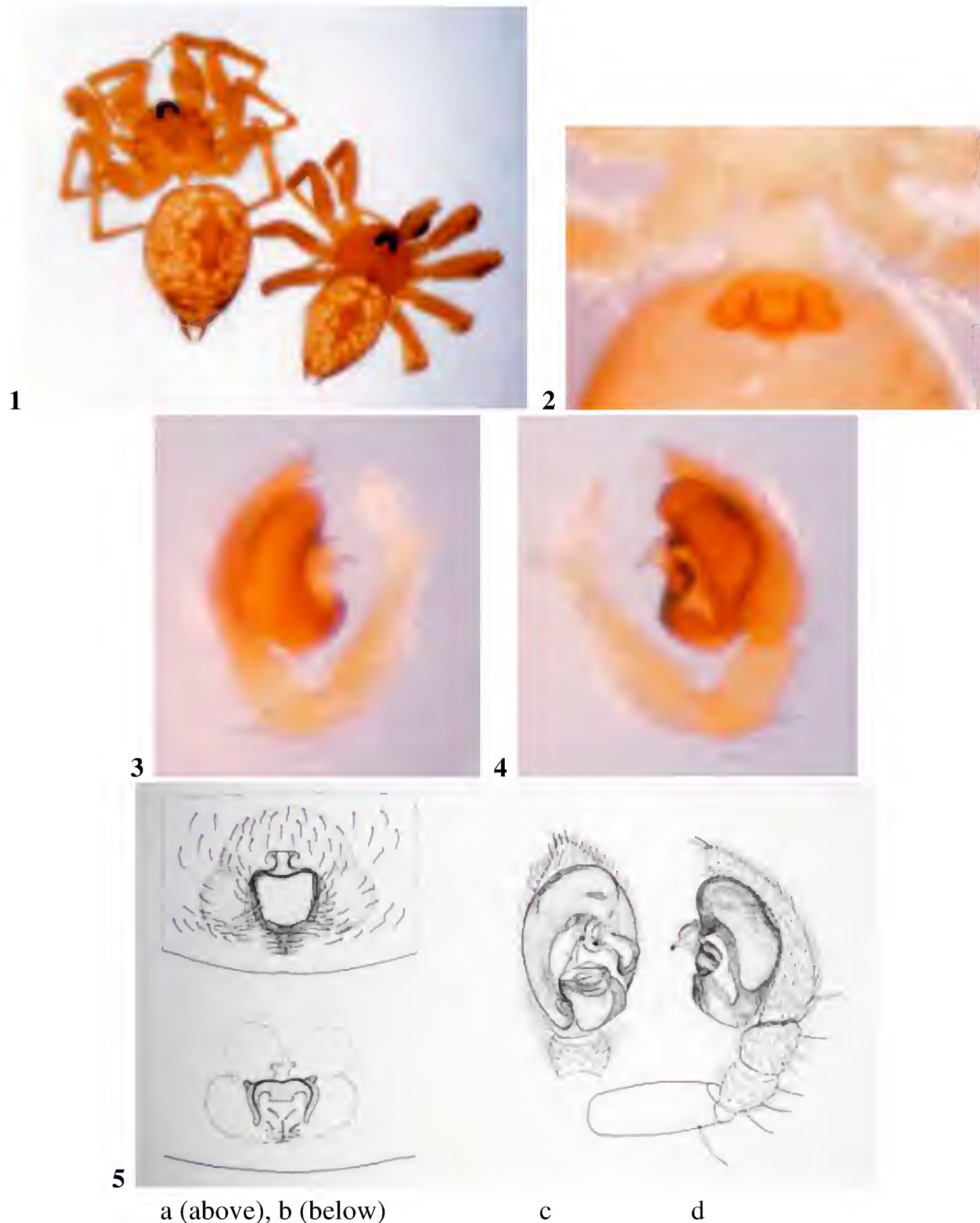
Distribution: Egypt, Ethiopia, Kenya, Uganda, Rwanda; Denmark, Netherlands, Belgium (introduced) (World spider Catalog, 2016).

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Figs. 1-5. *Oecobius amboseli* Shear & Benoit, 1974 [1-4. Cairo, Egypt. 5. Kenya]
 1. Female and male habitus, dorsal view. 2. Female epigynum, ventral view. 3-4. Male pedipalp. 3. prolateral view. 4. retrolateral view.
 5. Drawings of Murphy & Roberts, 2015: 529, f. 15. a-b. Female epigynum. a. ventral view. b. dorsal view. c-d. Male pedipalp. c. ventral view. d. retrolateral view.